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A FORECAST OF CHANGE IN THE CANADIAN EDUCATION SYSTEM

BY

KATHRYN (CHANG) BARKER ©

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR

THE DEGREE OF DOCTOR OF PHILOSOPHY

IN

EDUCATIONAL ADMINISTRATION

DEPARTMENT OF EDUCATIONAL POLICY STUDIES

EDMONTON, ALBERTA

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UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

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ABSTRACT

The purpose of this study was to examine possibilities for change in Canada's education system in the immediate future. The conceptual base for the study was threefold: education first as a system of inputs, processes and outputs, and second, as a product for consumption by a client group; change as an outcome rather than a process, and as either gradual reform or radical transformation; and the future as something to be shaped by planning. The intersection of these theoretical concepts led to the creation of the study rationale: that change in the various elements of the education system is necessary and unavoidable; and that the education system and educational administrators have a social responsibility for the future. Potential changes were identified primarily through a review of four types of literature.

The methodology for the study was a technology-based, computer-managed, modified policy Delphi. The choice of this methodology was purposefully futuristic. Respondents were two panels of informed individuals; in each of two phases, individuals from across Canada participated in the five-round Delphi.

Recommendations for change were divided into three groups, i.e., changes to the inputs and resources, to the processes and practices, and to the outputs and outcomes of the education system. Respondents judged the feasibility,

desirability and probability of the changes in each of the system elements and a considerable number were eliminated. The remain items were rated, in the final round, as to implementation timeframe and necessary catalyst to bring about the change. A second group of changes, deemed to desirable and feasible but improbable were judged for the potential reason for non-occurrence.

The conclusion of the study was a forecast of changes: a list of changes with approximate timeframes and potential catalysts for each. One application of the study is the creation of a vision statement for use in planning. As well, the catalysts for change, as identified by the respondents, indicate potential roles for stakeholders in promoting change. The barriers to possible and desirable changes may assist in planning processes.

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Chapter 1

INTRODUCTION

As an integral part of a society that is experiencing rapid change, the Canadian education system is also changing. The direction change could take is unknown, in part, because there is no comprehensive national plan for Canadian education. Various individuals and organizations have made suggestions and recommendations for change in Canadian education. The changes essentially take the form of either reform or transformation, that is to say, either modifications and improvements to the current system, or radical changes that could result in a very different system. In order to predict what the future state of Canadian education might be, this study is a forecast of changes to the education system in Canada. A forecast such as this has applicability in planning and policy development by educational administrators and others who have a responsibility to plan for the future.

Statement of the Problem

The problem to be addressed by this study is that, despite massive societal change, there is no articulated national plan or comprehensive forecast for the education system in Canada in the future and for the future. Various stakeholders argue for an improved and/or changed education system. The purpose of this study, therefore, is to examine the desirability, feasibility, probability and importance of reforms and/or transformations to the Canadian education system in the immediate future. The specific research questions are the following.

1. What reforms and/or transformations to education in general and to the formal Canadian education system in particular are suggested or recommended by:
    - 1.1 criticisms from consumer groups (eg., parents, business leaders, students)?
    - 1.2 reports and studies generated by producer groups (eg., provincial and federal governments, and teachers' organizations)?
    - 1.3 the literature on educational reform?
    - 1.4 the literature of futurists?
    - 1.5 the informed participants in the study?
2. According to informed stakeholders, with regard to the reforms and/or transformations identified, what is the:
    - 2.1 desirability of occurrence?
    - 2.2 feasibility or practicality of occurrence?
    - 2.3 probability of occurrence?
3. Of the reforms and transformations deemed to be desirable, feasible and probable, what is the:
    - 3.1 period of occurrence?
    - 3.2 catalyst for initiation?
4. Of the reforms and transformations deemed to be desirable and feasible but not probable, what is the primary obstacle or reason for non-occurrence?
5. What is the potential future state of the education system in Canada?

These questions guide the study processes and outcomes.

Conceptual Framework

This study, a forecast of changes to education in Canada, rests on three key concepts: education, change and the future. Because each term is multifacetted, it is essential to clarify the meaning of these terms as they will be used in creating the conceptual framework of the study.

For purposes of the study, education is conceptualized as both a system and a product. An examination of each helps to delineate, first, the elements of education that might be changed, and then, the relevant stakeholders in the study. According to systems theory (von Bertalanffy, 1950; World Future Society, 1977), education may be viewed as a complex and dynamic open system. It is a system of specific inputs, processes and outputs that interacts with an external environment (Bennis, 1989; Erwin, 1991; Harrison, 1987). These three elements of the system are categories within which change can be examined. As a product, education is the result of both an articulated need and the utilization of resources; it is a service produced by one group of stakeholders and consumed by another (Ewell, 1990). This conceptualization of education provides a framework for identifying and categorizing the relevant stakeholders in the study, i.e., the consumer and producer groups. As well, this conceptualization explains some of the demand and direction for change in education.

The second major concept that underpins this study is that of change, explicitly types of change as they relate to this study. Change is ubiquitous, locally and globally, individually and collectively, and is defined in a variety of ways, for example, by Ferguson (1980), Fullan and Stiegelbauer (1991), and Myers (1990). An examination of the concept of change from the perspectives of source, degree, and process leads to a narrowing of definition for purposes of this study; the term "change" is thereby operationalized to mean reform and/or transformation. The two terms are used to indicate that the changes forecast in this study may be reforms, i.e., gradual and positive improvements on the current system, or transformations, i.e., radical changes that result in a different system. In particular, as part of the conceptual framework for this study, the concept of "change" is applied directly to education as articulated by Bolman and Deal (1991), Cetron and Gayle (1991), Dixon (1992), Elmore and Associates (1991), Ferguson (1980), Fullan and Stiegelbauer (1991), Toffler (1990) and others. In addition, it is examined within the external environment or the wider societal context as presented by Drucker (1989), King and Schneider (1991), Myers (1990), Popcorn (1991), and others.

This leads to the third major concept in the framework of the study, "the future." The future may be viewed as either the past unfolding in a predetermined manner or as a time of possibilities that can be manipulated (Berger, 1973). From the first perspective, there is no need or opportunity to plan; from the second, planning can change or shape the future. What the future might be like according to futurists such as Attali (1991), King and Schneider (1991), Ornstein and Ehrlich (1989), Suzuki (1989) and others has a direct bearing on the orientation to planning. Forecasting is viewed as a method of describing a possible future state or scenario, and as such, has utility in planning and policy development for a preferred future.

The key concepts of education, change and the future underpin the rationale and methodology of the study.

Background to the Study

The purpose of this study is to forecast the implementation of change in the current education system in Canada. The background and rationale for this study rest on three interconnected issues set out in this chapter: growing criticism of and demands for change in the education system; administrative responsibility for planning a better future; and the integral relationship between education, change, democracy and the future.

From inside and outside the formal education system in Canada, there is a recognized need to adapt both to present demands for improvement and to societal trends and emerging issues. In particular, there are increasing demands for educational reform because of the following perceived problems:

- specific problems with the current system (Freedman, 1991; Holmes, 1989; Lortie, 1990; Panzeri, 1990, 1991; Raymond, 1990; Thorsell, 1990);
- general educational problems which exist on a North American scale (Drucker, 1990; Ferguson, 1980; Naisbitt & Auberdene, 1990; Toffler, 1980, 1990); and
- wider societal problems which result in urgent demands for change in the education system (Attali, 1991; Benveniste, 1990; Celente & Milton, 1990; Fullan & Stiegelbauer, 1991; Handy, 1989; Kriegel, 1990; Ornstein & Ehrlich, 1989).

This demand for reform is heard in conjunction with a very loud demand for accountability in education (Elmore, 1988; Gerson, 1990; Lortie, 1990; Norris, 1990).

In response to these demands for change, it is a responsibility of educational administrators to demonstrate accountability (Conrad & Blackburn, 1985; Harman & Johnson, 1979), plan for change (Bennis, 1989; Drucker, 1989; Toffler, 1980, 1990), and plan for excellence in education. Excellence, as a target by which to direct change, is defined in a wide variety of ways, for example, by Chinapah and Miron (1990), the League for Innovation in Community Colleges (1990), the Ministries of Advanced Education and Job Training, and Science and Technology in British Columbia

(1989), the Office of Vocational and Adult Education of the US Department of Education (1992), Padak and Padak (1991), Windham and Chapman (1990), and others. The findings of this study potentially become a tool for educational administrators in their efforts to deal with change imposed internally and/or externally.

The final element of the rationale is the interconnectedness of education, change and democracy. These terms are synonymous is some respects. From a systems perspective, the education "process" utilizes the inputs to result in "changed" skills, attitudes and behaviours, individually and collectively. From the futurist side of the discussion, democracy is predicated on the notion of change, i.e., that all citizens are entitled to the opportunity to bring about change. Changes that are external to the immediate sphere of influence and externally imposed are the determining factor in the balance between democratic decision-making and educational reform; i.e., the type of global change that either occurs or is imminent has a dramatic effect on the attempts to democratically plan and achieve "progress." Taken together in this manner, education and democratically planned change have a direct relationship to achieving a preferred and positive future.

The interconnectness of these concepts provides the rationale, foundation and guiding principles for the study, encapsulating its practical and theoretical significance.

Review of the Literature

The purpose of this study is to forecast change in the Canadian educational system. While there are conceivably unlimited numbers and types of changes that might take place, there are at least four major literature sources from which to draw those changes which are suggested or recommended by informed individuals.

One body of literature is the public press in which concerned stakeholders voice criticisms and recommended changes. Four groups of stakeholders are heard from in the media, particularly in newspapers and periodicals: parents and parent groups, teachers and administrators, representatives from business and industry, and special interest groups.

A second body of literature is comprised of current studies and reports commissioned by government and by large agencies such as the Conference Board of Canada. For example, recommendations for reforms are found in the current studies and documents of the Prosperity Secretariat (1992) and the Economic Council of Canada (1992).

A third body is the literature on educational reform, essentially from within the educational community, for example, works by such educators as Elmore (1990), Fullan and Stiegelbauer (1989), Thomas (1991), Schlechty (1990), Dixon (1992), Chubb and Moe (1990), and Cetron and Gayle (1991).

A fourth body of literature is the literature on the future, i.e., those works that examine broader societal trends and global change. In this literature, there are criticisms of the current system, current trends in education, and recommendations for changes.

In each of the four types of literature, there are explicit predictions and/or recommendations for change. Much of the literature is American, and this may limit generalizability or applicability to Canadian circumstances. Understandably, there are overlaps and contradictions in the recommendations. As well, the combined set of recommendations is not all inclusive; i.e., a new and perfect education system would not result from the implementation of all the best recommendations combined. With these reservations, each body of literature is reviewed in order to bring to the surface potential reforms and transformations that study respondents were asked to consider.

Significance of the Study

The practical significance of this study is imbedded in both the product and the process of the study. The outcome, a forecast of a possible future state of Canadian education, may be of use in planning and policy development by and for all stakeholders in the Canadian education system. Of particular significance is the opportunity, through the

Delphi process, of incorporating a variety of suggestions and perceived imperatives from disparate sources, from proponents of both change and maintenance of the status quo, and from leading thinkers and futurists.

Of equal practical significance is the process, i.e., a telecommunications-based, computer-managed modified policy Delphi as the adaptation of technology to planning processes and to democratic decision making. The methodology of this study, i.e., a telecommunications-based, computer-managed modified policy Delphi, is a form of electronic plebiscite.

The theoretical significance of this study may be two-fold. The first area of significance is the relationship between education, change, democratic decision-making, and global survival. The necessity to examine global change and potentially impending crisis is discussed fully elsewhere; suffice it to say at this time, actions such as forecasting of a possible future or scenario building may be critical to the survival of humankind. This aspect of the study is viewed as theoretical because there is, at this time, no formal opportunity or responsibility to enact the outcome.

The second area of theoretical significance is the attempt to relate futurist thinking and writing explicitly to the field of education and educational administration. From a very broad societal perspective, vast amounts of information have been accumulated about present trends, future possibilities, sweeping global change and challenges.

Some work has been done explicitly related to education. However, there has been, to date, very little connection between that body of literature and current practice in educational administration. This area, too, remains theoretical due to the acknowledged limitation of incorporating selected rather than inclusive futurist literature.

Design of the Study

The process of this study was to generate a forecast of change in Canadian education from the point of view of informed individuals through a policy Delphi. Operationally defined, the Delphi technique is an intuitive forecasting procedure for obtaining, exchanging and developing informed opinion about future events (Dunn, 1981). The procedure, simplistically, was to begin with a general question and, through subsequent rounds of questioning, provide a multifacetted and ordered answer. The data gathered, synthesized and analyzed, therefore, were personal opinions.

According to Dunn (1981), a policy Delphi typically embodies several types of questions: forecasting items (probability of occurrence), issue items (rank issues in terms of importance), goal items (judgements about desirability of goals), and options items (alternative courses of action). These types of questions, based on the literature review and the first Delphi round, formed subsequent questionnaires.

The respondents were individuals unofficially representative of leading thinking about educational reform. Guiding the selection of the respondents was the notion of two major stakeholder groups: the producers and the consumers. The producers were further broken down into direct and indirect providers; and the consumers into students and/or their guardians, and "consumers" of completers, for example, business and industry in Canada.

The steps of the Delphi technique employed in this study, based on the series of interrelated steps listed by Dunn (1981), were five rounds broken into two phases.

Assumptions

This study is based on the following assumptions.

1. The Canadian "education system" can be more than the current formal system of schools and post-secondary institutions. It can involve more than those currently labelled students and teachers.
2. The definitions, roles and jurisdictions governing education in Canada are not absolutely permanent, although change would be very complicated.
3. Societal change is inevitable. Whether it is positive or negative, chaotic or orderly depends largely on collective planning efforts at present.

4. The future can be shaped; it is not just the past unfolding or gradually revealing itself. Positive and proactive decisions must be taken to ensure a comfortable future for all Canadians and other global citizens.
5. In the societal context, educators have a prime responsibility for preparing individuals and shaping society for the future. Educational administrators have a responsibility for planning an improved education system for the future.
6. Regardless of the best planning efforts, the future is not completely predictable because of unforeseen events and changes that are not humanly constructed.
7. The "immediate future" is a term that defies definition. For purposes of this study, the term is used to mean "into the future barring a major crisis or catastrophic change."

Limitations and Delimitations

This study was limited in at least two ways. First, it was limited by the fact that all Canadians cannot be involved in the forecast process; the study was limited to a small number of informed individuals. As well, the study was limited to one of Canada's two official languages. While efforts were made to include francophone Canadians, the language of the study was restricted to English and those francophone respondents facile in the English language.

Additionally, the study had the following three delimitations. Because it is impossible to incorporate all of the literature related to educational reform, the study is delimited to literature representative of the major relevant types. Because it is impossible to incorporate the views of all students, this study was delimited to adult students and adults responsible for students who are legally minors. Finally, Canada's education system is comprised of both publicly-funded and privately-funded institutions and agencies and this study was delimited largely to Canada's publicly-funded education system in that it is something individuals can be relatively informed about.

Summary

The remainder of this dissertation contains a more thorough discussion of the contents introduced in this chapter. The actual study, chapters six and seven, and the conclusions, chapter eight, are based on the multiplicity of theoretical conceptualizations discussed in the second chapter, the background to the study presented in the third chapter, the extensive literature review in the fourth chapter, and the design of the study outlined in chapter five.

Chapter 2

CONCEPTUAL FRAMEWORK

The purpose of this study is to forecast changes to education in Canada in the immediate future. In order to do so, it is essential to operationalize the three key concepts: education, change and the future. In this chapter, first, the concept of education is examined and operationally defined incorporating a discussion of systems theory and educational outcomes. Secondly, the concept of change is examined and delineated, incorporating a discussion of educational and societal change. Thirdly, as this study is a forecast of a potential future, the concept of "the future" is explored.

Education Conceptualized

In order to discuss or forecast changes to Canadian education, it is first necessary to conceptualize the term "education." Two separate but connected conceptualizations of "education" are, first, education as a system, and second, education as a product. An examination of each helps to delineate both the elements of education that might be changed and the relevant stakeholders in the change process. This logically leads to the most critical aspect of the education system, that is, the outcomes or purposes of education.

Education as System

Education may be conceptualized as a system in which a number of discrete elements play a functional role. This conceptualization is imbedded in general systems theory, the theory that seeks to explain the behaviour of systems as aggregates of interacting units (World Future Society, 1977). According to Morgan (1986), "virtually anything can be defined as a system by drawing a boundary" (p. 352); this had led to the distinction between open and closed systems.

Education may be thought of as open system, a schema conceived by von Bertalanffy (1950) and applied to organizations by Katz and Kahn (1978), Beer (1980) and others. An open system is characterized by Schein (1980) as:

- taking in raw materials, people, energy, and information, and transforming or converting them into products and services;
- having multiple purposes involving multiple interactions between the organization and its environment;
- being in constant interaction with all its environments;
- consisting of many interdependent subsystems that are in dynamic interaction with one another; and
- having indeterminate boundaries between some aspects of the organization and the environment.

According to Harrison (1987), the eight main elements of an open system are: inputs or resources; outputs; technology, i.e., methods and processes; environment, both task and general; purposes, i.e., goals and objectives; behaviour and processes, i.e., interactions and relationships; culture or shared beliefs and rituals; and structure. Aspects of the internal environment are the purposes, culture, technology and structure of the organization. Influences from the external environment include available resources, societal stresses and trends, energy sources, competition, political and economic factors, legal and technological restrictions. Aspects of the human environment include "the social systems in which people have norms, values, shared beliefs, and paradigms of what is right and what is wrong, what is legitimate and what is not, and how things are done" (Bennis, 1989, p. 30). The terms "system" and "organization" are often used synonymously, both being a combination of the people, purposes and processes, a social invention for accomplishing goals through group effort.

From this perspective, education is a complex and dynamic open system. As an open system or organization, education is characterized by a continuous cycle of input, internal transformation or throughput, output, and feedback. As a dynamic, developing system, there is a key relationship between the internal functioning of the system and the environment, i.e., a state of interaction and mutual dependence.

Elements of the System

Within the education system, then, there are elements common to most educational organizations; however, there are differing methods of labelling or classifying them. For example, according to Pratt and Common (1986), the ten elements of the education system are: facilities, financial resources, clerical support, extracurricular programs, teacher qualifications, pupil-teacher ratios, working conditions, political issues, community relations, and conflict avoidance and resolution. According to Erwin (1991), an educational system includes any aspect of the learning environment that might influence students' behavior; the components of the environment are categorized as being instructional, social, organizational, fiscal and physical. To Thomas (1991), "the chief elements that comprise the "form" of formal education are the target population, the physical environment, books, teachers, and certification" (p. 122).

For practical purposes, the elements or components of "education" may best be derived from an examination of education as a broader system. Therefore, within the education system of inputs, processes, and outcomes, the elements that are common to most educational programs or organizations are the following.

1. **The inputs or resources of the system:**

1.1 entering students, in sufficient numbers, assessed for appropriate skill levels, and having learning needs related to future goals

1.2 personnel or human resources, i.e., the preparation, quality and appropriateness of the paid and volunteer instructional, administrative and support staff

1.3 finances, including a budget with timeframes, sources, and in-kind contributions

1.4 accessibility of available and unused resources in the local, national and/or international community

1.5 physical facilities such as classroom and office space, audiovisual and office equipment, recreation and library facilities, parking space, transportation

1.6 technological equipment for management, eg., computers and office equipment

1.7 technological equipment for instruction, including computers, audiovisuals, library technology, and telecommunications

1.8 student support services such as counselling, health services, child care, financial support

1.9 staff support services such as professional development, teaching assistance, peer support, and professional support services

1.10 teaching resources, i.e., curriculum, materials, technology, library, field trips

1.11 adminstrative structure at the local, provincial, national level

1.12 stated goals and plans for students individually and collectively, for local and national goals

1.13 time, i.e., semesters, commencement and completion periods

1.14 organizational culture, eg., values and norms, interpersonal relationships and communications

1.15 institutional organization, i.e., size, structure, decision-making

2. The processes and practices in the system:

2.1 student assessment (pre- and post-instruction)

2.2 student recruitment and program marketing

2.3 instructional methods and strategies

2.4 formal program plans and intended outcomes

2.5 informal learning opportunities and resources

2.6 supplemental programs, eg., sports, enrichment, remedial

2.7 student learning management, eg. individualization, streaming

2.8 logistics, i.e., class size, class length, semester length

2.9 student management, eg., discipline, motivation, rewards, counselling, retention

2.10 staff management, eg., evaluation, incentives, recognition, career paths, retention

2.11 administrative behavior, eg., teacher supervision, community interaction, learner involvement, planning, responsiveness

2.12 involvement with such aspects of the community as parents and businesses

2.13 links to other programs and services

2.14 program evaluation, development and accountability

2.15 interaction with the external environment, eg., community leadership, future orientation, responsiveness to government and to societal stresses

3. System outputs or outcomes (for):

3.1 individual students, i.e., achievements, changes, attitudes, skills which may be planned and/or unplanned, positive and/or negative, long-term and/or short-term

3.2 students collectively, eg., opportunities, responsibilities

3.3 local community, including advocates and opponents

3.4 society at large, short-term and long-term, eg., productive citizens

3.5 employers

3.6 teachers, support staff and volunteers

3.7 administrators and institutions

3.8 government departments, funders and policy makers

For purposes of this study, education may be defined as the total system of inputs and resources, processes and practices, and outputs and outcomes which are directed at positive impacts and achievements for the stakeholder groups. The primary stakeholders in the education system are:

- potential students who may or may not choose to participate;
- actual students who may or may not choose to continue participation and to complete;
- paid and volunteer instructors who determine teaching materials and methods, and who manage temporal resources;
- program administrators who manage human and financial resources, and who have responsibility for planning;
- institutional hosts who manage all types of resources;
- funders who need to account for fiscal expenditures and policy decisions;
- community and institutional agencies that provide support services to students;
- legislators and policy makers who need to justify decisions to the public; and
- the voting public, including business and industry, who can withold support and demand changes in policy and practice.

In summation, education may be viewed as a system of inputs, processes, and outputs centered on groups of stakeholders. This leads to the second conceptualization of education, i.e., education as a product or service as a response to stakeholder needs.

Education as Product

From a related perspective, education may be conceptualized as a product. From this view of education as a product, the formal education system is the same as a business. Schlechty (1991) notes that "the purpose of business...is to produce a product that will get and keep customers and from which a reasonable return on investment can be secured" (p. 54). In the business of education, Schlechty states, the product is "learning results." "Customers are people who have valued resources they can exchange for whatever it is the organization has to offer" (p. 84). Schlechty relates this to the need for educational restructuring: "the key to doing better is learning to hear what the various customers are asking for" (p. 94).

The formal education system is a product or service which is the result of both an expressed need and the utilization of resources, and which is to be consumed by a target client or customer. The need, in the case of education, is expressed both by the primary consumers, the students and their parents, and by the public at large which must be willing to pay for the product or finance the system. As an example, the need for the education system might be for a tool of economic renewal, teaching essential skills and subjects; an agent of social change, especially in a multicultural society; and/or environments that encourage individual self-esteem to enable students to become life-long learners. Fullan and Stiegelbauer (1991) encapsulate the purposes in this manner:

> There are at least two major purposes to schooling: to educate students in various academic or cognitive skills and knowledge, and to educate students in the development of individual and social skills and knowledge necessary to function occupationally and sociopolitically in society....Superimposed on these two main purposes in democratic societies is the goal of equality of opportunity and achievement (p. 14).

Need and purpose are closely related concepts: the purposes and outcomes of the education system must be related to the needs of each stakeholder group.

The resources, or costs, of education as a product are temporal, financial, human and material. First, time is a significant resource: the time that students use in and out of class; the time of numerous staff; and time using classrooms and other physical resources. Secondly, money is a critical resource:

- the actual finances and budget for the program;
- in-kind contributions from volunteer labor;
- fees paid by students, and other expenses incurred by students or their parents, such as texts, childcare, travel, parking;

- costs absorbed by the hosting institution for utilities, support services, and other hidden costs; and
- expenses which may be basic or additional, recurring or nonrecurring, sunk (past) or incremental (ongoing).

Thirdly, people are a critical resource or input: paid and volunteer staff who may be instructional, clerical, support, and/or administrative; incoming students; other significant persons in the lives of students; and advocates. A fourth resource is materials: instructional and assessment materials; library materials; consummables such as photocopying and computer time. These resources are part of the "input" in the education system.

The product resulting from the allocation and consumption of these resources is both the opportunity to acquire skills and to better society which is offered for consumption by potential students and those who have a vested interest in them. Inherent in this conceptualization of education as product is that of the consumer and producer. In the emerging consumer-driven society, described by Ohmae (1990), Popcorn (1991), Drucker (1990), and others, products are more and more tailored through technical innovation and specialization to individual needs, and the consumer derives more power through the exercise of decision making and buying. Therefore, the stakeholders in the education production / consumption system may be divided in the following manner.

1. Consumers are:
    1.1 actual students: in-progress, completed and non-complete (withdrawn or expelled), and
    1.2 the public: policy makers (politicians and bureaucrats), potential students, employers in large and small businesses.
2. Producers are:
    2.1 program funders and hosts: government ministries and sub-departments, institutions and agencies (educational and non-educational, eg., YMCA and large businesses), and
    2.2 program personnel: instructional (paid and volunteer), administrative, paid and/or volunteer (eg. governing and advisory boards).

Clearly, an education program system exists to serve a purpose: the achievement of positive consumer outcomes. Students and their guardians, as consumer, have the power to make informed choices and to expect individualization. According to Ewell (1990) and others, educational institutions have been "ignoring the needs of their customers" (p. 16). Accountability in education may be viewed as a response to the consumer demand for information and to the producer need for product improvement.

For purposes of this study, then, education may be viewed as a product, a learning opportunity/system, of sufficiently high quality or accountability to be acceptable to the consumers, i.e., the program impacts and achievements are at least adequate to meet the training needs of students and the public. This effectively relegates the program system phases of input and process to a secondary position and places outputs/outcomes as the primary issue for accountability and planning purposes. The fundamental question then becomes that of defining education outcomes: what it is that students need to learn and the ways in which they should develop as a result of the inputs and processes of the system.

Educational Outcomes

The purpose of the educational system is to produce positive outputs and outcomes for all the stakeholders in the system. The most important outcomes of an educational program are the achievements and impact for students, individually and collectively. As individuals, students learn new skills and develop new abilities; and these individual accomplishments combine to create outcomes for the wider community. This is somewhat complicated by the fact that producers and consumers, indeed all stakeholders, may have different and conflicting intended outcomes. In addition, there may be educational outcomes that are not intended but welcomed, and there may be negative outcomes.

The goals or outcomes of education may be divided into:

1. achievements, which are acquisitions or accomplishments like skill development, course completion, or program goal achievement; and
2. impacts, which are changes, either positive or negative, planned or unplanned, long-term or short-term, and individual or collective.

According to Rivera (1987), the impacts of an educational program:

> may be intended or unintended; may be positive, negative, or neutral in value; may be stable or unstable or fleeting; may be seen at the immediate closing of the program or service and/or may be seen a long time following the program or service; may appear for primary recipients or participants in the program or service, for secondary recipients and/or for tertiary recipients twice removed from being directly involved in the program or service (p.162).

Change or impact for each stakeholder group is one measure of educational outcomes, i.e., the number, variety, and degrees of changes for any or all stakeholders as a result of the educational program. As Windham and Chapman (1990) state, "Educational programs are conducted to bring about a desired change in the way people do their jobs, in what they know or the skills they can apply, and in their attitudes, beliefs, or outlooks" (p. 194). This has an effect, both long-term and short-term, on both the individual student and the community at large.

A second view is more closely allied to student achievements. According to some, learning and development include most of the possible goals of education (Erwin, 1991). Learning refers to the acquisition of knowledge or behavior as a result of one's experiences or one's education (Erwin, 1991, p. 18). Development is synonymous with growth or progressive changes in the person, cogitive, affective or both.

The goals of education, i.e., the intended achievements and impacts, can be described and measured in a variety of ways, for example, qualitatively and quantitatively, oriented to the values of one stakeholder group and/or agreed to by all stakeholder groups, with immediate orientation and future orientation, causally and descriptively. This can be translated to mean that goals do not have to reflect only statistical achievements but personal accomplishments and changes as well.

Windham and Chapman (1990) caution that there are two main difficulties with relating all achievement and impact effects to the educational inputs. First there is the problem of determinancy, i.e., correctly imputing the causal effect of education; second is the discounting for time, i.e., delayed or postponed benefits. Nevertheless, the consumers and producers of educational programs have a variety of intended achievements and impacts that relate to excellence, accountability and change in education.

Change Conceptualized

The second major concept that underpins this study is that of change, explicitly types of change as they relate to this study. Change is ubiquitous, locally and globally, individually and collectively. An examination of the concept of change from the perspectives of source, degree, and process leads to a narrowing of definition.

Defining "Change"

The term "change" is defined as both a noun and a verb (Concise Oxford Dictionary, 1982); it is both an altered state and a process. The processes and/or results of change may be positive, negative or neutral. By source, change may be voluntary or imposed, and natural or of human making (Myers, 1990; Fullan & Stiegelbauer, 1991). By degree, it may be minimal or radical, and temporary or permanent.

The process of change can take various forms. For example, Myers (1990) states that change can be evolutionary, "flip," accelerating, cyclical, revolutionary, retrogressive or catastrophic. Ferguson (1980) conceptualizes the change processes as being: change by exception (old methods and beliefs remain intact but a handful of anomalies are allowed); incremental change; pendulum change (the abandonment of one closed and certain system for another); or paradigm change (transformation). Gore (1992) discusses a different change theory. He first presents two kinds of change: "the slow and gradual change that is typical of our daily lives and the rapid, systemic change that occurs when a pattern shifts from one state of equilibrium to another, a shift that comes as a surprise" (p. 361). He then adds a third kind, combining elements of the first two, which is labelled "self-organized criticality." Sometimes called the sandpile theory, this change theory is based on the effect of a single grain of sand in the dislodging or transformation of a sandpile being built. Similarly, incidents in human behavior and development, like grains of sand, build until a state of disequilibrium is reached and massive reconfiguration occurs. Based on this type of change, Gore concludes that "change begets change, then feeds on its own momentum until finally the entire globe seems to be accelerating toward some kind of profound transformation" (p. 361).

For purposes of this study, change is operationally defined as an altered state; it is operationally confined to the noun rather than the verb. Change, or the altered state, is the result of external and/or internal forces that create pressures for change. While change is usually a process rather than an event, it is not a purpose of this study to examine the process of bringing about altered states. There are a number of terms that are commonly used synonymously with "change" as a noun, for example, reform, innovation, transformation, alteration, paradigm shift. By examining these and other synonyms according to degree, source and process, the "change" terminology for purposes of this study is further refined.

The term "change" is operationalized for purposes of this study as being reform and/or transformation. The term "reform" is defined by the Oxford Concise Dictionary as something made better by the abandonment or removal of faults, imperfections or errors. By implication, the term is a positive one; it implies improvement as a result, and incrementalism, evolution or gradual change as a process. The source and degree of change is indeterminate. The term "transformation" is defined as something changed in form, appearance, structure, et cetera. This term does not imply improvement; it may be positive, negative or neutral. However, it does imply that the degree of change is greater than that implied by the term "reform," and the process may be more radical. Thus, the two terms are used to indicate that the changes forecast in this study may be reforms or transformations, i.e., gradual and positive improvements on the current system, or radical changes that result in a different system.

Change in Education

The formal education system is but one societal institution that is experiencing change. In the literature on educational change, some of the terms that are used, with subtle differences, are:

- educational reform (Fullan & Stiegelbauer, 1991),
- "restructuring schools" (Elmore & Associates, 1991; Schlechty, 1991),
- "reframing" organizations (Bolman & Deal, 1991),
- paradigm shift (Ferguson, 1980; Toffler, 1990),
- "educational renaissance" (Cetron & Gayle, 1991), and
- "evolutionary" future schools (Dixon, 1992).

Despite the variance in terms, the kinds of changes recommended and/or anticipated range along the axis from minimal reforms to radical transformation.

According to Fullan and Stiegelbauer (1991), "educational change involves two main aspects: what changes to implement (theories of education) and how to implement them (theories of change)" (p. 46). This study focuses on the former. In fact, some argue that there has been and continues to be significant change in education. However, not all attempts at reform or transformtion have been recognized or successful. Fullan and Stiegelbauer (1991) state:

> One of the most fundamental problems in education today is that people do not have a clear, coherent sense of meaning about what educational change is for, what it is, and how it proceeds. Thus, there is much faddism, superficiality, confusion, failure of change programs, unwarranted and misdirected resistance, and misunderstood reform (p. 4).

According to Schlechty (1991), although societal change is ubiquitous and challenging, and although the formal school system needs to address this change, "schools are organized to maintain and defend the status quo; school systems, at least most school systems, are not organized to ensure continuous improvement and development" (p. 96).

Fullan and Stiegelbauer (1991) note that there are two categories of innovations that explain why some changes are more successful than others. First-order changes are those that improve the efficiency and effectiveness of what is currently done without disturbing the basic organizational features; second-order changes seek to alter the fundamental ways in which organizations are put together, including new goals, structures and roles.

> Most changes (in education) since the turn of the century have been first-order changes, aimed to improve the quality of what already existed. Second-order reforms largely failed....The challenge of the 1990s will be to deal with more second-order changes; changes that affect the culture and structure of schools, restructuring roles and reorganizing responsibilities, including those of students and parents (Fullan & Stiegelbauer, 1991: 29).

The pressure for change in education may arise, according to Fullan and Stiegelbauer, from one or more of the following: natural disasters such as earthquakes; external forces such as imported technology and values, and immigration; and internal contradictions, such as when indigenous changes in technology lead to new social patterns and needs. Clearly, massive societal change is creating both internal and external contradictions, leading to pressure for change in the Canadian education system.

Societal Change

Some societal changes are perceived to be negative, resulting in uncomfortable change and compromise; other changes, technological advancements for example, may be perceived as tremendous opportunities.

The current environment in which the education system finds itself is characterized by unprecedented change and mounting pressures in which resources are stretched and dwindling, alternatives are not readily available, and significant problems are being created for Canadian business, government and taxpayers (Alberta Education, 1991; Steering Council on Prosperity, 1991; Economic Council of Canada, 1992). In Alberta, for example, some of the changes of relevance to educational policies, identified by Barrington (1981), are:

- technological demand for training and retraining,
- a growing Alberta population,
- intensified development of the resource industry,
- inflation,
- industry as a pressure group,
- increasing in-migration,
- a government policy of fiscal restraint,
- industrial expansion,
- computer technology,
- growth in the service sector,
- a different student population at postsecondary institutions,
- demands for flexibility in educational programming, and
- demands for accountability at all levels.

These changes are magnified by the major global transformations listed by King and Schneider (1991) in the Club of Rome report, i.e., rapid change in economic theories and functions, an unprecedented interdependence of nations, the deteriorating environment, and the advance of high technologies. They are also magnified by the changing nature of information. According to Gore (1992), the production of information has far outstripped the capacity to use it; "we are drowning in information" (p. 200). In summation, the current social, educational, and political environment in which the education system finds itself in Canada is charged with pressures, political expediencies, demands for change, and severe financial worries. Myers (1991) predicts that evolutionary or gradual change will become the exception and that human civilization is entering a period of accelerating and abrupt change. It is clear that, from the degree of current change under way, the immediate future will be very different from the present.

Conceptualizing The Future

The third major concept in this study is that of "the future." What is the future? It is where we plan to spend the rest of our lives (Myers, 1990). From this simplistic statement, a myriad of issues and imperatives break away like shards of glass from a shattered crystal globe. Some would like to ignore "the future," perhaps thinking that the ostrich manoeuver is the best way to cope. Others study it assiduously and attempt to give guidance and hope to humanity.

What is readily apparent is that, from all perspectives, planet Earth and humankind are in crisis. There is massive change underway, change that can be channelled for survival or that can be ignored at our peril; Suzuki (1990) states that we're at the end of living and the beginning of survival.

Global Change

There are a variety of views about the future and the changes that are currently taking place. For example, from a review of the literature of the future, there are at least four broad-based theories of global change that create views of the future:

1. an economics / market form theory of change (Attali, 1991);
2. a power theory (Ferguson, 1980; Toffler, 1990);
3. a globalization theory (Drucker, 1989; King & Schneider, 1991; Ohmae, 1990; Schwartz, 1991); and
4. an environmental crisis theory (Gore, 1992; Myers, 1990; Suzuki, 1989).

Although these broad-based theories of change are somewhat different, a reading of futurist authors reveals some compelling commonalities in future scenarios.

The first commonality is the concept of impending crisis and paradigm shift. According to Drucker (1989), Toffler (1990), and others:

- the "Industrial Age" will not pass into the new "Age of Knowledge" without causing chaos;
- the environment cannot sustain the human onslaught without disaster;
- the shift of global power from the old superpowers to the new global economic masters will not be without resistance.

These are major paradigm shifts, and inherent in the definition of paradigm shift is the concept of stress and crisis, of pressure building to a sudden transformation. Toffler (1980) emphasizes that crisis is part of the process of paradigm shift: "Trends, no matter how seemingly powerful, do not merely continue in a linear fashion. They reach tipping points at which they explode into new phenomena" (p. 129). The challenge, then, is for humankind to be able to deal with paradigm shift proactively and positively in order to ensure global survival.

Related to this is a second commonality, the concept that significant human adaptation is necessary for the survival of human civilization. Ornstein and Ehrlich (1989) point out that:

> Cultural evolution has not compensated for the baggage of an outdated human perceptual system. It has not, for example, invented a cultural "time lapse" system for perceiving the gradual changes that human biological systems are incapable of sensing. It has not led school curricula to convey the limits of the human perceptual system. It has not led to the establishment of governmental institutions that force politicians to pay attention to the long-term consequences of their actions....It has not, therefore, given us the means of survival (p. 64-65).

Human decision-making processes and priorities must change to ensure, at a minimum, survival of the status quo and, at best, sustainable development on a global scale.

Another commonality is the need for new forms of governance. King and Schneider (1991) argue for a system of global governance, i.e., not a global government but "the institutions of cooperation, coordination, and common action between durable sovereign states" (p. 113). According to the Club of Rome, governments are unable to generate innovation, are often politically and morally corrupt, operate on a model of confrontation versus collaboration or consensus, and, in short, are unable to deal with global problems that threaten human existence. "What is needed is a reformulation of the appropriate levels of decision making to bring the points of decision as near as possible to those who enjoy or suffer their consequences" (p. 18). According to Attali (1991), "the future of all countries will depend on their ability in these respects to redistribute resources so that each person can gain a share of the new hyperindustrial world. For a country, everything will depend on its ability to educate its citizens" (p. 128). New forms of governance are needed to deal with global problems and to involve more people in a participatory manner. This is related to the evolution of democracy and utilization of technology in implementing participation by individuals.

These views of the future and the commonalities between them have a direct bearing on this study. If it can be accepted that the future can be shaped through planning, Morrow (1992) notes that the problem of the future consists in defining one's priorities and making the necessary commitment. This applies directly to the system of education in Canada. More importantly, education in all its forms is a critical component in bringing about positive, proactive change. Canadian education, in the future and for the future, will change as it attempts to meet this need.

Summary

For purposes of the study, education is conceptualized as both a system and a product. It is a system of specific inputs, processes and outputs that interacts with an external environment. It is, as well, a service produced by one group of stakeholders and consumed by another.

Changes forecast in this study may be reforms or transformations, i.e., gradual and positive improvements on the current system, or radical changes that result in a different system. Change is evident in the education system, and in the internal and external environments of that system.

Forecasting is a method of describing a possible future state or scenario, and as such, has utility in planning and policy development for a preferred future. Local and global societal changes impact on the external and internal environment of the education system. The future that we all experience depends on planning and priorities of the education system specifically and in Canadian society at large.

These key concepts of education, change and future underpin the rationale, methodology and outcomes of the study.

Chapter 3

BACKGROUND TO THE STUDY

The purpose of this study is to forecast the implementation of change in the current education system in Canada. The rationale for this study rests on three interconnected issues: growing criticism of and demands for change in the current system; planning and administrative responsibility for a better future; and the integral relationship between education, change and the future.

Problems with the Current System

The current education system in Canada is not perfect. Problems are indicated, for example, by Canada's high drop-out rate (Lafleur, 1992; Murphy & Cool, 1991), and the high adult illiteracy rate (Calamai, 1987; Cairns, 1988; Canadian Business Task Force on Literacy, 1988; Statistics Canada, 1991). However, the loudest voices of criticism are those of the consumers, that is, parents, taxpayers, and employers. From one perspective, there is a growing volume of negativity; from another, there is a more constructive demand for change; from a third perspective, there is a demand for accountability, presumably on the assumption that scrutiny will lead to improvement.

Current Criticisms

There is, currently, a public outcry about the perceived failure of Canadian schools together with a demand for accountability of public expenditures in newspaper and periodical articles, scholarly texts and the literature on societal trends and issues. For example, Holmes (1989), a professor at the Ontario Institute for Studies in Education, provides this assessment.

> Recent international studies of achievement tell us again that Canadian schools are characterized by mediocrity....Our expensive, flabby, mediocre and obsolete system should be made more accountable, more competitive and more rigorous (p. 59).

Editors and editorialists in newspapers blast away with such headlines as:

- Education system blamed for illiteracy (Panzeri, 1990),
- Education is Canada's worst subject (Raymond, 1990),
- Vested interests keep Canada's students near bottom of the world class (Thorsell, 1990),
- Education in Canada: Failing the grade (Panzeri, 1991), and
- An education system that must try harder (Editor, 1991).

Panzeri (1991) points out that:

> There's a nationwide crisis in confidence in an education system that spent $43-billion in 1989-90 -- the second highest among industrialized nations -- and is not producing the desired results. That's led to big worries that Canadian students will be unprepared to face the challenges of the 21st century, and that Canada itself will sink to the economic depths of a Third World country (p. E1).

Lewington (1993) states:

> the harshest charges are levelled against elementary and secondary schools, where the complaints extend to all facets of education: flabby course content, questionable teaching methods, high numbers of dropouts, bias against minorities, inadequate vocational programs and mediocre results. Worse yet, schools set expectations too low and offer too little accountability (p. A6).

According to Simpson (1992), the problems of the current system are "the errors of wrong-headed educational theorists and their friends in education bureaucracies. A generation of students has now passed through the system they designed. The task for the next generation will be to unlearn the bad habits of the previous one" (p. A20).

The weakness of the current education system has been noted in Canada, according to Freedman (1991), by the federal government, the Economic Council of Canada, the Business Council on National Issues, the Conference Board of Canada, Canadian Manufacturers' Association, Canadian Chamber of Commerce and the Ontario Premier's Council who all draw the relationship between educational excellence, national productivity and prosperity, and international competitiveness. According to Lortie (1990), results of international tests of student abilities are consistent with business surveys that indicate as many as 70 per cent of firms are dissatisfied with how the high school system prepares students for work. A survey by Gallup Canada Inc. in September 1992 found that 58 percent of those polled expressed dissatisfaction with the educational system.

There have been persistent calls for change from business and industry, government departments, politicians and others. Halliwell, chair of the Science Council of Canada cited in article "Education shakeup urged" (Sept 24, 1991), calls for a much closer examination of what results are being obtained for money spent on education, and for an adjustment of the system to meet real needs. Thurow, dean of the Sloan School of Management at the Massachusetts Institute of Technology, says that the education system must change to keep up with changes in industry where process technology has become paramount. Others argue for adjustment of the system to meet current societal standards of productivity. As David Kearns, former CEO of the Xerox corporation notes: "Public education is the only industry we have where if you do a good job, nothing good happens to you, and if you do a bad job, nothing bad happens to you."

On a broader scale, condemnations of the present North American education system are clearly stated in the works of such futurists as Ferguson (1980), Toffler (1980, 1990), Drucker (1990), Naisbitt and Aberdene (1990), and many others. For example, Toffler (1990) states: "An acknowledged disaster area for America is its factory-style school system" (p. 450). Celente and Milton (1990) point out the following.

> Our school system was designed to meet the needs of a growing industrial society. It taught people how to read, write, and do some arithmetic. More importantly, it taught them how to follow instructions and be good

> employees. It didn't teach them how to think. It didn't teach them how to ask questions, how to analyze problems, or how to find solutions. It didn't have to, since management did all the thinking. As long as working for a business was like being in the army, this system worked. But the needs of our society have changed and our school system no longer meets them. It doesn't even meet the needs of our army, let alone our economy (p. 85).

Ferguson (1980) labels the current education system as "our culture's great learning disability, an educational system that emphasizes being "right" at the expense of being open" (p. 280). She continues:

> Schools are entrenched bureaucracies whose practitioners do not compete for business, do not need to get re-elected or to attract patients, customers, clients. Those educators who would like to innovate have relatively little authority to change their style (p. 280).

In the opinion of Cetron and Gayle (1991), four systemic failures in the American education system are that:

1. the education system is designed more for organizational and political convenience than for learning;
2. a huge number of subdisciplines, such as women's studies and minority issues, are crowding out the core academic curriculum;
3. textbooks are chosen more to appease special-interest groups than to ensure that students receive a good education; and
4. students proceed through the system in lockstep fashion, rather than being taught according to their needs and promoted according to their achievements.

From a different perspective, Gore (1992) links problems with the current educational system to the rapidly changing nature of information. In the process of mass-producing information, the wisdom of past experience has been devalued. Gore concludes that "it is not a coincidence that we have a crisis in education coinciding with our surfeit of information. Education is the recycling of knowledge, but we find it easier to generate new facts than to conserve and use the knowledge we already have" (p. 201). Many other futurists, for example King and Schneider (1991), Ornstein and Ehrlich (1989), and Attali (1991) add to this litany of criticism.

In the minds of many, the current education system is largely to blame for the economic problems facing most developed countries. Attali (1991) explains it this way.

> In the mid-60s the cost of producing services began to spiral upward as the economy sought to satisfy the rising social demands of a generally prosperous consuming public. The rise in energy prices made the problem worse. It was not the chief cause. Three services - education, health care, and defense - were more culpable, for they began collectively to consume a disproportionate share of all value produced by the industrial countries. As a result, both profits and wages began to fall (p. 90).

According to many critics, education utilizes far too many resources in relation to its productivity, i.e., it is inefficient in addition to being ineffective and obsolete.

Finally, scholars such as Handy (1989) and Fullan and Stiegelbauer (1991), planners such as Benveniste (1989) and Kriegel (1990), and futurists such as Celente and Milton (1991), Ornstein and Ehrlich (1990), and Attali (1991) all argue for constructive, compelling change in all social institutions, particularly education. The demands for change are both being heard more frequently and more vociferously in reference to perceived shortcomings in education systems.

The Demands in Context

Significant changes in the internal and external environments of the Canadian education system have combined to form the context of the demands for reform of the system.

Regarding the current climate of change in education, Lewington (1992) takes note of:

1. the emergence of influential new players, i.e., business, parent and taxpayer protest groups, the federal government, all demanding a larger role in decisions about schools;
2. public anxiety about the economy, i.e., worry about the ability of schools to produce graduates who can succeed in a fiercely competitive global market;
3. pressure on the educational system to centralize, with calls for national testing and a core curriculum taught to all students while at the same time, provincial ministries and local school boards are under pressure to decentralize to give parents and employers more control over local issues; and
4. growing demands on schools to provide more social services to fill roles once played by the church and the family.

Celente and Milton (1990) list the following trends and circumstances that have a direct impact on change in the American education system:

1. the breakdown of the family, which has shifted more responsibility to the schools, and which has lessened parental involvement in education;
2. misplaced governmental priorities which put more financial resources in defense, big business, etc.;

3. a decline in the quality of teachers and teaching, the reasons being low pay, low status, women seeking better jobs, a decline in quantity of people interested in teaching, ineffective teacher training, too few rewards and lack of recognition, and too much political intervention;
4. the unacceptable dropout rate of 30% and the relationship between drop-outs, the unemployment rate, family breakdown and a growing underclass;
5. adult illiteracy, i.e., the awareness that millions of adults lack the reading and writing skills they need to find work, thereby costing millions of dollars in lost productivity, welfare, crime, and prison expenses;
6. the creation of a permanent underclass of young people who cannot hold jobs because they lack fundamental literacy skills and work habits, who can't find or hold jobs so are likely to become involved with drugs and crime;
7. the widening gap between the products of the school system and the needs of our society which has become a constraint on economic growth; and
8. the increasing inability of North America to compete academically or economically with major world competitors.

According to Lawton (1991), in Canada there are a number of external or environmental forces which call for educational reform. First is a crisis in legitimation. The legitimacy of existing educational systems is being called into question in terms of the effectiveness of schools in addressing the high drop-out rate, the problem of illiteracy, and the violence and drug dealing among students. Second is concern about effectiveness. High rates of unemployment among youth, declining rates of return for investment in secondary education, and changes in the nature of jobs that are available suggests that the school system is providing neither an adequate or a relevant education. Third is concern about efficiency. Canada spends more per pupil on education than any other OECD country except Sweden, without noticably superior results. Fourth is the managerial revolution. The most effective organizations are those which use a combination of "tight-loose" control, i.e., control that is tight on objectives but loose on procedures; the traditional school bureaucracy does not fit this pattern. Fifth is a populist movement. "Yuppie" parents are demanding greater control over the education of their children; there is a commitment to quality which calls for a highly decentralized approach to address the "particularistic" demands. Sixth is a crisis in capitalism. Canada has consistently distributed more wealth than has been created within the economic systems; governments are now attempting to reallocate income away from public services and hard decisions relative to cuts are being decentralized. Seventh and last is a concern with provider capture. Those who are providing the educational service (teachers and administrators) capture the benefit; i.e., those who operate the system may do so in a way that provides special benefits to their own kind.

In summation, problems inside and outside of the education system have given rise to considerable criticism of the existing system. The result is increasing demand for accountability and excellence in education.

Accountability and Educational Change

The growing public pressure for accountability and reform in education is part of a trend towards accountability in all forms of resource utilization. Erwin (1991) notes the following.

> The practice of accountability is commonplace in our world today, and it is realistic to expect its continuance rather than its deemphasis. Essentially, evaluation is built into most public programs, and education is one of the last areas to follow suit (p. 7).

According to Windham and Chapman (1990), the increased interest in accountability in education is a result of at least two converging factors: increased interest in assuring the responsible use of public monies; and, awareness that, as the level of financial investment in education has increased, the opportunity costs posed by educational expenditures in terms of other social investments foregone has increased. These authors point out that we are all now faced with either finding new fiscal resources, accepting quality deterioration and continued access inequity, or increasing the efficiency with which educational resources are applied. Obviously, the first option is economically unrealistic, and the second is politically and ethically unacceptable, so the third is the only viable option.

Norris (1990) has suggested that current educational accountability efforts have roots in a 1960s, in a "cult of efficiency" study conducted by Callahan (1962). Norris notes that, at present as in 1962, the same issues are raised:

- public criticism of the effectiveness of schooling;
- questions of the economic relevance and the importance of basic skills;
- accountability, choice and the rights and roles of parents;
- teacher competency and teacher appraisal;
- standards, the promotion of excellence, testing and monitoring; and
- the efficient use of resources.

Other academics in the field of educational evaluation have concluded that a 1970 speech by President Nixon signalled the rise of "accountabilism" in education (Nilsson, 1979); Nixon explicitly stated that all educators and administrators should be held accountable for their performance. This was subsequently reinforced by the business community. Drucker (1974) declared that such service institutions as schools and colleges are parasites on the well-being of the market economy, and what really matters is to be accountable by setting goals and measuring achievements.

During the 1970s, considerable discussion revolved around the need for both accountability of public institutions and evaluation of educational efficiency. Elmore (1988) viewed this as significant to current initiatives directed at reform.

> Beginning in the late 1970s, there was an appreciable shift in educational policy which resulted in the current generation of reforms. The rhetoric of this generation is quality, productivity, efficiency and performance. The main policy instruments are standards, assessment and monitoring devices, teacher competency tests, student achievement tests and the like (p. 4).

During the 1980s, then, the concern for accountability led to the "effective schooling movement" and to calls for action, characterized by _A nation at risk: The imperative for educational reform_ (US Department of Education, 1983). However, the emphasis on accountability appears to be related to the ebb and flow of economic stability and political fortunes; and during the affluent 1980s, educational accountability had a low profile in North America. Gerson (1990) and Lortie (1990) have noted that current requests for accountability and reform are related to increasing demands for lessening resources. Thus, as the North American economy struggles with a current period of recession, Iacocca (1990), Wolfe (1990) and many others warn that the tide of accountabilism is rising for public and private institutions.

In the 1990s, such documents as _America 2000: An educational strategy_ (US Department of Education, 1991), _Learning well... Living well_ (Canadian Department of Industry, Science and Technology, 1991), _A lot to learn: Education and training in Canada_ (Economic Council of Canada, 1992), and _Vision for the nineties_ (Alberta Education, 1991) continue this formal call for reform and accountability. There are demands from government and academic institutions for proof of program or educational impact (Courtenay & Holt, 1987; Rivera, 1987). There are even greater demands from business and industry for proof of learning and achievement of individual students (Drucker, 1974; Lortie, 1990).

Each decade, the call is heard for educational accountability and reform, and not surprisingly, it is almost exactly the same each time. In an analysis of the two American documents, A Nation at risk: The imperative for educational reform and America 2000: An educational strategy, Sewall (1991) found redundancy, as both:

1. generally sought higher standards for the instruction and performance of students of all backgrounds and capabilities,
2. believed that the solution to the educational problems of the nation did not lie simply in increased spending, and
3. felt that a strong academic curriculum and rules that are clear and consistent were appropriate and constructive for children and adolescents (p. 205).

These criticisms and demands for real change, effectiveness and efficiency, by the producers and consumers of the education system, must be addressed by educational administrators.

The Role of Educational Administration

Faced with requests for reform and accountability, educational administrators have at least three interrelated responsibilities: to demonstrate accountability, to plan for change and for the future, and to engender excellence in education.

Demonstrating Accountability: Guiding Change

Given the demands for accountability in education, the obvious question becomes: accountable for what? The answer to this question is the same as: reform or transform what? According to Harman and Johnson (1979), stakeholders in the education system hold administration responsible for financial, academic and legal accountability.

Financial accountability is demanded primarily by the taxpayer, the board of governors or trustees, the funding ministry, and the government. Administration, claims Harman and Johnson (1979), is expected to provide simple accountability for the actual expenditure of funds and the procedures by which that expenditure is accounted for. This concept of accountability has been extended by Young (1984) and others to incorporate such comparative measures as cost-benefit, cost-effectiveness and equity analysis, measuring the success of the system in financial terms. That stakeholders have a right to demand that the increasing sums laid out for education be justified by reliable estimates of outcomes is claimed by Bowen (1974), Lessinger (1970), and others.

In addition to financial accountability, administration has legal accountability, responsibility to a minister and government to ensure that the institution operates within the formal legal framework provided by legislation, government regulations and government instructions (Harman & Johnson, 1979). A subset of legal accountability is moral accountability, the responsibility of administration and the education system to impart culturally and societally relevant and appropriate knowledge.

Finally, administration has academic accountability. This entails the responsibility for goals set by the institution, academic policies followed, students admitted, courses and programs offered, assessment practices, and results achieved (Harman & Johnson, 1979). One specific element of academic accountability, identified by Conrad and Blackburn (1985), is program quality. As with accountability, program quality has multiple meanings; the cultural dimension of quality in North America is related to excellence or highest quality, and the process of achievement of goals. A second specific element of academic accountability is instructional outcomes and impact, i.e., the products of learning, instruction and curriculum. The primary goal of the educational system is student learning, and administration is accountable for the achievement of this goal. The achievements of individual learners leads to and is related to program impact, i.e., program effectiveness and usefulness. Thus, academic accountability is complex and critical to all stakeholders.

From a different perspective, educational accountability is the demonstration of organizational effectiveness by such measures as those developed by Mott (1972), Steers (1977), Campbell (1977) and Ratsoy (1983). According to Ratsoy (1983), accountability is measured along a taxonomy of organizational effectiveness with five categories of indicators: goals, other outcomes, personnel characteristics, organizational variables, and environmental variables. More explicit to the evaluation and accountability of an educational organization, there are a variety of factors associated with effectiveness of educational institutions. For Renihan and Renihan (1984), educational effectiveness involves leadership, conscious attention to climate, academic focus, great expectations, sense of mission, positive motivational strategies, and feedback on academic performance. According to Gunn and Holdaway (1986), institutional effectiveness is evidenced by: satisfaction, morale or "spirit" of students and teachers; academic achievement in post-secondary institutions; satisfaction or supportive attitude of parents or community; preparation of students to be responsible citizens; caring, professional attitude of competent teachers; and preparation for employment. Conrad and Blackburn (1985) describe a quality program as one with adequate support, i.e., the resources to maintain the operation, provide for faculty travel, and attract and retain outstanding faculty; one in which the curriculum has all of the essential ingredients; and one with sufficient numbers of students. The OECD (1989) listed the following indicators of institutional effectiveness in the education system:

- a commitment to clearly and commonly identified norms and goals;
- collaborative planning, shared decision-making, and collegial work in a frame of experimentation and evaluation;
- positive leadership in initiating and maintaining improvement;
- staff stability;
- a strategy for continuing staff development related to each school's pedagogical and organizational needs;
- working to a carefully planned and coordinated curriculum that ensures sufficient place for each student to acquire essential knowledge and skills;
- a high level of parental involvement and support;
- the pursuit and recognition of school-wide values rather than individual ones;
- maximum use of learning time; and
- the active and substantial support of the responsible educational authority .

These and many other measures are suggested as the criteria for demonstrating effectiveness or accountability of educational institutions. Similarly, these and other elements provide the framework for change in education.

The critical point here is that, according to many consumers, the current education system is neither able to demonstrate accountability or meet suggested criteria for effectiveness to an acceptable degree. Logically, then, it is a function of educational administration to both demonstrate accountability and reform or transform elements of the system to maximize system effectiveness and quality.

Planning for Excellence in Education

Closely related to attempts to demonstrate accountability and improve elements of the education system is the need to understand and attempt excellence in education. This too is a nebulous and changing concept. However, educational administration is charged with the responsibility of defining and providing excellence in education, i.e., of examining what constitutes educational success, quality or excellence. Inherent in the administrative responsibility for planning and for the future is the concept of planning for excellence; i.e., it would be absurd to generate a plan for mediocrity.

Excellence in education may be defined in terms of outcomes, specifically those achievements and impacts that constitute maximum system effectiveness and efficiency. System effectiveness is a degree of success, i.e., the extent of goal achievement, ranging from unacceptable through acceptable to optimal and exemplary. System efficiency is the degree of effectiveness relative to the resources used. Logically, the desired outcomes are synonymous with the system goals.

Some educators and education stakeholders are uncomfortable with the application of the economic concept of efficiency to a social setting such as education. However, "the concept of educational efficiency, when properly understood, provides a comprehensive framework for designing and conducting educational program evaluations" (Windham & Chapman, 1990, p. 1-2). The difficulty then becomes, in education, to tabulate the costs and inputs, to assess and measure the outputs, and to find appropriate standards for comparison that define the quality of effectiveness and efficiency. The producers or providers of the education system are accountable for ensuring the effectiveness and efficiency of the program for the consumers: effectiveness of outcomes relative to what was intended and efficiency relative to the resources utilized. The means by which to examine outcomes and success in education have been explored from a number of perspectives, as per the following example.

Padak and Padak (1991) have created a tentative list of indicators of program effectiveness.

1. Personal factors:
    1.1 academic achievement, eg., learners' gain on standardized tests or success rates, and

    - 1.2 quality of life, eg., changes in self-esteem, in relationships with others, in basic skill-related or general confidence;

2. Programmatic factors, i.e., program structure or content:
    - 2.1 program structure, eg., success in recruitment and the number of students enrolled and regularly attending, and
    - 2.2 program content, eg., instructional methods, staff quality, and the availability of staff-development activities; and
3. External factors:
    - 3.1 context-based, eg., assessment of changes in learners' behavior or attitudes by persons who were not associated with the program, and
    - 3.2 financial factors, eg., assessment of financial savings to the community, with data about program costs and estimated savings, for persons no longer needing public assistance.

Further examples of quality indicators in education are evident in the literature. In summation, the literature on program evaluation and educational accountability provide various means by which to examine educational excellence and to guide planned change in education.

Planning for The Future

One function of management or the administration of an organization is to plan for the future (Bennis, 1990; Drucker, 1989; Toffler, 1980, 1990). Although planning is an organizational response to a changing environment, there are choices:

1. to not plan, feeling powerless and incapable of influencing future developments;

2. to look to the past and present for factors that influence the organization, and conduct planning in a reactive mode; or

3. to analyze emerging trends that will influence the organization in the future and conduct planning in a proactive manner.

Those who have attempted to sketch the emerging future, Toffler (1980, 1990), Drucker (1989), Naisbitt and Aburdene (1990), and Ohmae (1990) and others, emphatically stress the necessity of planning strategically by looking into the future in order to create an improved future. In fact, according to Bennis (1990), it is a responsiblity of administrators to foster paradigm shift.

> True leaders work to gain the trust of their constituents, communicate their vision lucidly, and thus involve everyone in the processes of change. They then try to use the inevitable dissent and conflict creatively and positively, and out of all that, sometimes, a new paradigm emerges (p. 30).

According to Bennis (1990), major paradigm shifts have already been set in motion. New organizations have begun to emerge. Some futurists say that, in order to make the transition, a critical incident can be expected in the future (Ferguson, 1980; Toffler, 1990). These writers and many others are clear that the future holds changed organizations and shifted paradigms, and that change is often resisted and disruptive. The approach taken to planning for this inevitable change reflects both an orientation to the future as a concept and to planning an imperative.

According to Benveniste (1989), effective planning is planning that makes a difference with results that are worthwhile. Planning is a technical activity requiring such resources as time, expertise, and finances; and it is a political activity involving change and power. Planning is political because, in making a difference, something is changed that might not have been changed otherwise; and this implies that social power has been used.

Effective planning is a management tool; planning as management is centrally concerned with bringing about change. Planning, as de facto management, functions to establish the importance of the future in day-to-day decision making, to rectify short-term vision, and to facilitate adaptation and learning (Benveniste, 1989).

Forecasting, as conceived of in this study, is a combination of both planning theories as articulated by Benveniste (1989): it is substantive, i.e., knowledge, action, and methodologies derive from the problem at hand; and it is procedural or generic, i.e., knowledge, action, and methodologies derive from procedures and processes of planning that would be common to most, or all, planning situations. This is clearly, then, a strength of forecasting in planning.

Benveniste lists the following six theories of planning:

1. advocacy planning, which focuses on the beneficiaries of the plans;

2. the comprehensive rational approach, i.e., a systems view utilizing goals, policy alternatives, criteria and monitoring;
3. apolitical politics in which planners are both technicians and discrete politicians;
4. critical planning theory which is concerned with the distribution of power within society and the extent to which planning reflects this distribution of power;
5. strategic planning which seeks to define what might or could happen and to present alternative courses of action under different scenarios;
6. incrementalism or mutual adjustment, what some call the science of muddling through.

Forecasting is a tool that can be used in all forms of planning. More importantly, some knowledge of possible and plausible futures is critical to any of the above planning theories.

As has been pointed out repeatedly, education has a critical role to play in the unfolding of the future. Therefore, administrators must take a proactive role in understanding and planning for the future. The first imperative must be to become informed about broad-based views of global change and specific trends that affect global survival. The second imperative is to acknowledge the current imperfect status of education and to utilize knowledge of current trends to begin to plan for an improved future. An overriding imperative, however, is for educational administrators to accept responsibility for the future.

> Never before have people held as much power to shape their future as they do today. And never before have there been so many urgent decisions to be taken by a single generation in order for the world to realize its tremendous potential for prosperity while remaining livable (Attali, 1991: 119).

Accepting responsibility entails taking a leadership role, performing a planning function, and instituting proactive change. According to Celente and Milton (1990), this has not been the case in educational administration.

> The system is run by administrators who view the world through the eyes of their profession; they didn't look outside of their field and see what was happening in the family or the economy. They didn't see how trends in other fields were going to affect education. They didn't proact, they only reacted. Instead of changing the system, they only expanded the bureaucracy and tinkered with the curriculum (p. 86).

Therefore, there is an urgency for educational administrators to look beyond their own field of endeavor in planning for a better future.

According to the Report of the Club of Rome, educational leaders must learn to become "social architects" (p. 207). Educational institutions have a responsibility to both produce leaders and become leaders of the kind King and Schneider (1991) say are absolutely vital, i.e., "leaders with a new profile of the world" with such qualities as:

- a strategic vision and a global approach to the priority elements of the problematique;
- a capacity for innovation and adjustment to change;
- an ethical perspective, making no concessions to expediency;
- courage to change his/her mind as perceptions of situations and problems deepen;

> - effectiveness in taking decisions after due dialogue with colleagues and advisers, in ensuring the implementation of the decisions and, in due time, in assessing the results;
> - capacity to learn and to encourage others to learn;
> - ability to inform the public clearly of the general direction of policy in a way which encourages them to identify;
> - capacity to relegate strategy and tactics to their proper place as means and not as ends; and
> - willingness to set up systems through which s/he can listen in to the needs of the citizens, their fears, demands and suggestions (p. 205).

Educators and educational administrators must become involved in the change process and the survival effort more directly and more effectively than at present. In order to do so, it is important to understand the broad theories of global change with resulting implications, to peruse the various sources of information and prediction regarding education specifically, and to undertake administrative behavior that incorporates future imperatives with present educational initiatives. Specifically, educational leaders must respond to the criticism leveled by much of the futurist community and work to create a better educational system in the future and for the future. Educational administrators as leaders have a responsibility for the future, as much or more so than many global citizens.

Education and Change

The final element of the study rationale is the interconnectedness of education, change and democracy, i.e., the concept of education, change and democracy as synonymous is some respects. Education is, from one perspective, preparation for the future, which is, defacto, preparation for change. From another perspective, education is change in knowledge, attitudes and abilities, individually and collectively.

From a systems perspective, the education "process" utilizes the inputs to result in "changed" skills, attitudes and behaviours, individually and collectively. From the other end of the discussion, democracy is predicated on the notion of change, i.e., that all citizens are entitled to the opportunity to bring about change. Henry (1993) states: "Democracy by its nature spurs change: no other system replaces leaders and rewrites the social contract with such speed because none other presupposes that government renew its right to govern virtually every day" (p. 34).

As we Canadians envision our future, we simply assume that it will be pleasant, characterized by democratic decision-making, positive incremental change, and improved education systems: a modified version of the present. However, various and conflicting conceptualizations of "change" indicate that this may not necessarily be so. Because change is the new constant, externally imposed change is the determining factor in the balance between democratic decision-making and educational reform; i.e., the type of global change that either occurs or is imminent has a dramatic effect on the attempts to democratically plan and achieve "progress."

Tremendous change and preparation are needed to provide Canadians with an acceptable quality of life in the future. It is the responsibility of educational administrators to foster positive change both for the improvement of the educational system and for the betterment of humanity. It is both possible and necessary to shape the future. Without question, there is an urgent need to comprehend and utilize the vast amounts of current knowledge in planning for constructive change, possibly even survival. As Ferguson (1980) says,

> very few people are synthesizing the information being gathered in far-flung places. It is as if military scouts were continually returning from reconnaissance missions with observations and there were no generals to put it together (p. 146-147).

To facilitate this synthesis and to provide for a positive future, a clear vision for the future must be articulated.

According to many, a national plan is needed in order to facilitate the development of a new or improved education system in Canada in and for the future. However, as education in Canada is a provincial jurisdiction by decree of the British North America Act, there is neither a national sense of a Canadian education system nor a vehicle mandated to develop one. Therefore, the education system may not be able to change sufficiently to be responsive to societal demands, to play its part in the process of ensuring the kind of future we would like to spend the rest of our lives in.

Even with the best of efforts, it may be difficult to ensure a pleasant future for humankind. According to many writers and thinkers, planet Earth and humankind are facing catastrophe through environmental, political, technological and/or economic crisis (Attali, 1991; Cetron & Davies, 1991; Drucker, 1989; Eisler, 1987; Ferguson, 1980; Gore, 1992; King & Schneider, 1991; Myers, 1990; Ornstein & Ehrlich, 1989; Suzuki, 1989; Toffler, 1990). Education in all its forms has a vital role in initiating and supporting positive global change. According to King and Schneider (1991), in dealing with global survival:

> The role of education is even more vital than we have imagined. But it will take much research and work to rethink the concept of education and enable it to open up to the dimensions of the coming times such that the educators of today and tomorrow will be in a better position to discover the immensity and the nobility of their task: to lead the way to an evolution of the mind and behaviour and thus to give birth to the new -- one and manifold -- civilization (p. 216).

Thomas (1992) emphasizes the critical importance of learning, stating: "The very survival of our world today depends on successful learning and successful management of learning" (p. xvi). He joins the chorus of thinkers and writers who are genuinely concerned about the survival of human civilization and for whom there is a critical link between survival, environmental preservation and education. He states:

> The environment has become more subject to control by human decision, and acquiring the learning that will allow us to make such decisions wisely has become vital. Our learning determines our behaviour, and as our behaviour has become all-important to the survival of our planet, so has our learning (p. 2).

The current system of education has been the primary means of dealing with human learning potential and, according the Thomas (1991), it has become insufficient in dealing with the major problems facing the modern world. He says: "We have pushed the "educational solution" as far as it will go, and we must now turn our attention to other means of nurturing, inspiring, and applying the will to learn" (p. 18). Thomas quotes from the UNESCO declaration of 1985 on the right, not to be educated but to learn.

> Recognition of the right to learn is now more than ever a major challenge for humanity.
>
> The right to learn is: the right to read and write; the right to question and analyze; the right to imagine and create; the right to read one's own world and to write history; the right to have access to educational resources; the right to develop individual and collective skills.
>
> The right to learn is an indispensible tool for the survival of humanity.

Henderson (1991), in Paradigms in progress: Life beyond economics, points out that education is key to global sustainability. Henderson and others argue that the current form of economics, accounted for by the Gross National

Product, does not incorporate most of the production work within society and that a new form of national accounting is needed. In the numerous innovative accounting means, education is a key indicator; for example, in the Quality Indicators for Progress which is an alternative to the GNP measure, the nine categories in which measures are taken are the local economy, public safety, health, education, natural environment, mobility, government/politics, social environment, and culture/recreation. More specifically, the quality of education and educational opportunity is viewed as one important measure of the community's or society's success or quality of life. In the future, then, Henderson would see quality of education as a quasi-economic measure of success.

Learning and education for survival will require rethinking and retooling the system. The challenge, through educational reform, is to train "new minds" that can perceive and react appropriately to long-term change; according to Ornstein and Ehrlich (1989):

> The world is an increasingly dangerous place, and many of its new dangers are not instanteously obvious. Our reactions to the modern world are often inappropriate because of the nature of our minds and the training we give them. This mismatch threatens the destruction of civilization (p. 189).

It is impossible to pretend that a crisis is not imminent or that the education of individuals and whole societies does not have a pivotal role to play in global survival. Ornstein and Ehrlich (1989) succinctly state: "Before large-scale action can be taken, however, there must be public awareness, public debate, and a decision to take action as a society....It will take a revolution in the way we bring up children and in the way we teach and what we teach" (p. 191).

Futurist and American Vice President Gore (1992) articulates a pressing need to reform education in two key ways. First, education must be given priority status in its capacity to bring about positive change worldwide; and second, education must be used as a tool to draw attention to what Gore sees as the unprecedented threat to human survival. Gore presents a convincing argument that, without positive change specifically regarding environmental awareness and preservation, there may be no future for human civilization. "In philosophical terms, the future is, after all, a vulnerable and developing present, and unsustainable development is therefore what might be called a form of 'future abuse'" (p. 235).

> History is change, and change is a relentless, driving force. Now that the human community has developed into a truly global civilization, we have a choice: either we search for the means to steer the changes shaping our new common history or we will be steered by them--randomly and chaotically (p. 172-173).

One important role of education, therefore, may be to assist in this search a for means to shape change; a second may be to dispel the tendency to "turn by default to an imprudent hope that we can adapt to whatever changes are in store" (p. 239). Through education, we may be able to restore "the faith that we do have a future. We can believe in that future and work to achieve it and preserve it, or we can whirl blindly on, behaving as if one day there will be no children to inherit our legacy. The choice is ours; the earth is in the balance" (p. 368).

Summary

The background and rationale for this study rest on three interconnected issues: growing criticism of and demands for change in the current system; planning and administrative responsibility for a better future; and the integral relationship between education, change, democracy and the future. The interconnectness of these concepts provides the rationale, foundation and guiding principles for the study. Together they encapsulate the practical and theoretical signficance of the study.

Chapter 4

REVIEW OF THE LITERATURE

This study is a forecast of change in the Canadian educational system, that is, a prediction regarding potential reforms and/or transformations to the education system in the immediate future. While there are conceivably unlimited numbers and types of changes that might take place, there are at least four major literature sources from which to draw those changes which are suggested or recommended. One body of literature is the public press in which concerned stakeholders voice criticisms, recommend changes and provide brief examples of innovations. A second body of literature is composed of current studies and reports commissioned by government and by large agencies such as the Conference Board of Canada and the Prosperity Steering Group. A third body is the literature on educational reform essentially from within the educational community, for example, works by such educators as Thomas (1991), Schlechty (1990), Dixon (1992), Chubb and Moe (1990), and others. A fourth source of potential changes is the literature on the future, i.e., those works that examine broader societal trends, reforms and global change by Drucker (1989, 1992, 1993), Gore (1992), Popcorn (1991), King and Schneider (1991), Toffler (1980, 1990), Osborne and Gaebler (1993) and others.

In each type of literature, there are explicit recommendations for change. Understandably, there are overlaps and contradictions in the recommendations. As well, the combined set of recommendations is not all inclusive; i.e., a new and perfect education system would not result from the implementation of all the best recommendations combined. Finally, the literature which is American may not be completely generalizable to the Canadian context. With these reservations, each body of literature is reviewed in this chapter in order to identify potential reforms and transformations that study respondents will be asked to consider.

The Popular Press

In current periodicals, newspapers and newsletter, various groups of stakeholders voice criticism and suggest change. Four such groups are parents, leaders in business and industry, politicians, and educators. A fifth group is more disparate, composed of many individuals and organizations that hold specific concerns.

Parents and Parent Organizations

The views of some parents, individually and collectively, are evident in the media; typically, only those who want change are heard.

A number of parent groups, whose aim is educational reform, have sprung up across Canada. In British Columbia, CARE wants to see a more traditional curriculum. In Calgary, an education lobby group called Albertans for Quality Education are calling for a voucher system to put parents in control of the financing of education (Marshall, 1993). An Ottawa group, Partners Initiating Quality Educational Directives (PIQUED), would like to amalgamate small school boards into one large one to reduce expense and overlap of service (Nikiforuk, 1993). PARENT in Nova Scotia wants reinstitution of music programs and a return to smaller class sizes (DeMont, 1993). Winnipeg's Parents for Basics want more focus on direct skills instruction. The Organization for Quality Education in Ontario wants public schools that reflect the will of parents; a province-wide sequential curriculum for each subject and grade; objective evaluations in each subject area set against provincial, national and international standards; and wide dissemination of information about effective instructional techniques. Parents, as stakeholders, have often found a voice in banding together and often take a limited perspective.

One parent acting without a parent group to bring about educational reform is J. Freedman who, with M. Holmes of the Ontario Institute for Studies in Education (OISE), has created a report and video called Failing grades (1993). Freedman and Holmes (1993) recommend, among other things, changes to the way math and reading are taught. They hold the view that parents and teachers need the freedom to establish schools with high standards and a shared ethos.

The criticisms and recommendations of parents are one source of change in Canada's education system. For the most part, parents espouse reformed processes and practices in the system with the view to producing a similar but improved outcome.

Business and Industry

A second source of recommendations for change, commonly heard from in the popular press, is members of the business and industry community in Canada. As with parent stakeholders, there are both collective and individual voices. Business representatives, however, approach the discussion of educational change from the need to produce different and improved outcomes.

A primary collective voice of business leadership is the Conference Board of Canada. Business and industry have indicated to the Conference Board that there should be more business involvement in education; greater public awareness of the critical link between education and a successful society; and an effort to arrive at a common understanding of the intended product of the education system in Canada. The Conference Board of Canada (1992), after an extensive consultation process, has produced what they label an "employability skills profile." The critical skills required of the Canadian workforce, according to the Corporate Council on Education of the Conference Board, fall into academic skills, personal management skills, and teamwork skills. Similarly, the Economic Council of Canada (1990) has generated the following list of skills required by employers: basic academic competence, creativity and initiative, analytical and problem solving abilities, adaptability, and communication and interpersonal skills. Presumably, they'd like the education system to produce potential workers with these skills; presumably, given the current criticisms of the education system, reform is needed in order for this to happen.

The editor of The Globe and Mail (Jan.4, 1993), as a major corporate player, states that more money is not needed, but that a system of national testing is. This prominent Canadian newspaper recommends a systematic national application of the CSAT (Canadian Scholastic Aptitude Test), devised and administered by the federal government and offered voluntarily to students across Canada, which would test basic skills, with individual results available to students and parents, and results by district available to everyone through publication in the newspapers. Thorsell (1990, 1992, 1993), editor-in-chief of the newspaper, consistently calls for a greater federal role in Canada's formal education system.

Related to this, the Business Council on National Issues, a lobby group for major corporations, is proposing a standard test for entry-level job applicants that would assess both their academic skills and personality traits such as motivation and aptitude. According to Lewington (1993), "It represents a potential challenge to the education sector because it says, in effect, that those who rely on the school system for employees want a larger voice in defining what they expect of high-school graduates" (p. A1). In this, BCNI is supported by the Canadian Federation of Independent Business.

In addition to these collective voices, other voices of concern from big business in Canada are those such as Atkinson, chief economist of the Bank of Montreal, who is quoted in Raymond (1993): "If we in Canada want to preserve our standards of living, then we're going to have to go up the value-added chain. That means a national commitment to training, to improving standards in education. And that will require new resources" (p. B6). Business and industry, through the Canadian Labour Force Development Board and other venues, are beginning to play a substantial role in educational reform. Their focus is typically on outcomes and the measurement thereof, leaving the processes to the professional educators.

Politicians and Political Parties

A third source of recommendations for change are the platforms of various provincial political parties. Some that have found their way into the press are the following.

Based on its paper Education for all (1993), the Liberal Party in Alberta would overhaul standardized educational testing, but not force the release of results; improve access to technical and vocational programs; increase the use of high technology in and among schools; establish a curriculum policy advisory board with representatives from parents, business, labor, trustees, post-secondary education, and teachers; review teacher preparation programs; re-evaluate existing school boundaries and encourage small boards to amalgamate; and propose an early intervention program. This is a mixed bag of reforms to input and processes of the system.

In contrast, the current (1992) Progressive Conservative government has instituted, then tentatively retracted, gradeless education which encourages students to work at their own level of ability instead of meeting specific academic standards (Loyie, 1993). As well, a different branch of the government, the Ministry of Economic Development and Trade, has stated that education and economic priorities must be integrated, that investment in the education and training of the workforce must embrace the broadest possible number, and that lifelong learning and skills development must be promoted (Government of Alberta, 1990).

Freeman (1993) reports on the actual reform strategy under way in New Brunswick, which includes a series of programs aimed at improving literacy, and raising education standards. It is supported by an integrated jobs and education strategy that draws heavily on business, communities and the school system, based on the assumption that learning is the new competitive advantage. Specifically, the New Brunswick government has introduced standardized testing, extended the school year, increased time on task, strengthened math and science offerings, and introduced accountability through testing at every level. In addition, there is provincial coordination rather than local control of educational institutions.

In Ontario, as reported by Mackie (1993), current educational reforms include destreaming in high schools, and integration of students with special needs into the general school system. The current (1992) New Democratic government is supporting a provincial commission focusing on financing (eg., inequities between systems), organization (eg., number of school boards), curriculum, teacher training and special education. Controversy about past and present reform attempts continues to rage in Ontario (Lewington, 1993; Powell, 1993; Raphael, 1993).

Ahead of Ontario, British Columbia conducted a royal commission that led to the "Year 2000" reforms which represent a switch in thinking from traditional ideas about schools. The new focus is on the individual, with changes in curriculum and teaching methods to help students become "active" learners, rather than passive recipients of knowledge. Such a philosophy assumes students learn best in an environment that accentuates the positive. Within the current curriculum, the material is reorganized to emphasize process, not just content. Schools are encouraged to develop non-traditional courses that blend math and science, or English and history, so that students learn not only how to make connections across subject areas but to apply them to the outside world. Testing and evaluation by schools and the province remain part of the system but are broader in scope. Students are encouraged to assess their own performance. Parents have a greater political voice, through stronger parent-school councils at the local level and as designated advisers to the ministry on educational reform. This reform plan has not been without its detractors (Quinn, 1993; Nikiforuk, 1993).

In Quebec, two innovations have been reported. First, Quebec plans to implement higher standards to enter college and proposes a financial penalty for failing courses repeatedly (Seguin, 1993). A more fundamental reform has been the reorganization of Quebec's denominational school system along linguistic lines (Picard, 1993).

In summation, because education is a provincial jurisdiction, each provincial government has an ongoing interest in the state of its education system. Therefore, politicians and political parties are pulled into the educational reform debate. The changes they advocate, typically in response to demands from consumers of the system, are typically changes to inputs and processes.

Insiders: Teachers and Administrators

Undoubtably, change is taking place in the education system, and sometimes teachers and educational administrators have their views and innovations presented in the media.

It seems that educators have, in large measure, adopted a negative stance or defensive mode regarding change, i.e., in the media, individuals and groups express predominantly negative concerns with actual and pending reforms. For example, the Alberta Teachers' Association has complained about some reforms, pointing out the problems with integration of special-needs students into regular classroom without appropriate assistance and training (Moysa, 1993). Savage, Past President of the ATA, states that Alberta's teachers can't help students properly because of too many trendy but conflicting innovations in education. In particular, some intended reforms are highly contradictory, for example, Alberta Education has decided that students with special needs or behaviour disorders must now be integrated into regular classrooms and all students should be able to learn at their own rate; however, it has also mandated that there must be more province-wide testing of students to ensure that every student is at the same standard. Similarly, many teacher's organizations have been opposed to the School Achievement Indicators Project, an ostensible national pre-reform program (Nikiforuk, 1991; Sarick, 1991). Even in the popular advice column of Ann Landers (1993), a teacher complained of the problems within schools and attributed it to the "abysmal failure" of so-called "nouveau education."

On the positive side, teachers and administrators have been recognized for some creative innovations that serve as sample reforms. An example of a set of innovations that reformed a particular school is the "educational entrepreneurialism" at Birds Hill School in Winnipeg (Roberts, 1993). Some of the actual innovations are:

1. a women in science and mathematics awareness program for parents with girls age 8 to 14;
2. career club which provides systematic exposure of grades 5 and 6 students to engineering, lab technology, aeronautics, entrepreneurship and other careers;
3. young scholars, i.e., business leaders and university student introduce children to careers in urban development, physiology, microbiology and geology; also explain what a university is and why it exists;

4. Workplace 2000 designed to make parents aware of future skill needs in the workplace;
5. mentorship which puts 10 and 11 year olds in touch with practicing professionals in journalism, financial services, public relations, manufacturing, telecommunications, computers, technical writing, biotechnology and analytical chemistry;
6. a media and technology unit in which students use desktop publishing and other technologies to produce a newspaper and operate a radio and TV station;
7. KidsNet, a commercial electronic database information source for children aged 9-14;
8. the Invention Convention, an activity to get students involved in inventing and to develop a positive attitude towards Canadians and women as inventors; lateral and creative thinking is encouraged.

These innovations are aimed at addressing the school's mission statement: to encourage students in a compassionate and sensitive way to deal with the technological, environmental and social issues in a rapidly changing world. The school is assisted in meeting this mission statement through effective links and donations from such local business as Digital Equipment Corp and Northern Telecom.

Briefer examples of reforms are the following. In Edmonton, site-based management has encouraged unprecedented competition between schools (Cernetig, 1992). In Toronto, a special program for at-risk students is being piloted (Mitchell, 1993); it combines high school and university level courses, and "enrollment is restricted to the very bright who have somehow lost their way" (p. A7).

In addition to actual examples of reforms and innovations, educators have taken the opportunity to speculate on trends in educational change. In an article produced by Xerox Canada Ltd. (1993), educators noted a growing variety in schools specializing, for example, in science and technology, arts, international baccalaureate, modern languages, international business and law. According to Lacey, a school superintendent in Toronto, education is becoming consumer-driven, more relevant. Lacey predicts that, with regard to increased use of technology, CD-ROMs and computers will soon be part of every school. Leithwood, an education professor quoted in Xerox (1993), sees more community responsiveness: "just as large corporations are becoming more responsive to their shareholders...schools will become more responsive to community needs" (p. C6). In that same article focusing on the year 2000, the Canadian Teachers' Federation foresees:

1. changes in the teaching force, eg., the average age is expected to drop in the decade after 2000, it will be more racially diverse, and individuals will have larger instructional repertoires;
2. changes in instructional modes, eg., more co-operative or group-directed learning, and more individual learning;
3. changes in student evaluation, eg., standardized tests in math and science, and portfolios of high school work;
4. changes in teacher training, i.e., teachers are going to go out and work for businesses for a short period of time and bring back those skills to teach their students; and
5. more work programs, i.e., more co-operative education programs and the disappearance of vocational programs due to cost and declining enrollments.

Teachers and educational administrators are in the position to generate and/or implement reforms, to understand and utilize trends in education. While they are clearly doing so in many cases, their voice is somewhat muted in the public press.

Issue-specific Representatives

A final category of stakeholders in educational reform are those individuals and groups who represent special interests, many of whom link their causes to needed change in Canada's education system.

A first example relates to increasing the importance of human-rights education. Yalden, head of the Canadian Human Rights Commission who is quoted in Picard (1993), while speaking at a Unesco conference on the links between education, human rights and democracy, noted that "Canada, as an increasingly multicultural country, should pay close attention to the importance of education in building a tolerant, equitable and just society" (p. A4). Yalden says that "education is the obvious key."

A second special interest group would like to make changes that reduce child poverty and decrease illiteracy. The National Anti-Poverty Organization (1993) recommends, among other things, early intervention programs to identify and support poor children at risk of educational problems; more direct support to single mothers where poverty is a chronic problem to encourage parents to upgrade literacy skills; and more funding for literacy programs with flexible hours. Valpy (1993) further emphasizes this issue.

A third special interest is increased use of technology. The International Centre for Leadership in Education (ICLE) recommends increased emphasis on technical reading and writing skills; more emphasis on physics, as the underpinning of electronics, than on algebra; and lengthening of the school year to teach "new skills" of technological competence.

A fourth group carries on a battle for and against a national testing program, represented by such individuals as Gilliss (1993), Dunning (1993), Lewington (1993). In particular, the Council of Ministers of Education in Canada is involved in this specific educational reform, the first of its size in Canada.

A particularly large special interest group focuses on the problems and needs of "school drop-outs." A number of reports and studies articulate the problems, for example, the Conference Board of Canada study entitled Dropping out: The cost to Canada (Lafleur, 1992), and the Canadian Youth Foundation report entitled Dropping out and dropping in: A study of youth and literacy (Murphy & Cool, 1991). Critiques of the studies and the statistics abound, for example, The Globe and Mail (1993, April 5), and Aikenhead (1993). A similar number of reports suggest solutions and actual innovations, for example Lewington (1993, April 5), Valpy (1993, May 11), and Thacyk (1993).

Another particular interest group would like to reform the size and function of the education bureaucracy. Some would eliminate school boards and fund schools directly (Murgatroyd, 1993); others would combine small schools boards into a single larger one (Nikiforuk, 1993); still others would reduce size of the provincial bureaucracy (Davis, 1993).

A wide variety of other special interest groups would like to see a wide variety of other changes. There are groups arguing for:

- more and different vocational training, perhaps like that of the German apprenticeship system (Kinzer, 1993);
- sweeping reform such has taken place in Britain (Fennell, 1993; Thorsell, 1993);
- more access to bilingual education (Fraser, 1993);
- more curriculum time and materials related to history (Sherman, 1993);
- native control of education for Canada's first nations' people (Cheater, 1993);
- increased emphasis on physical fitness (Globe and Mail, 1993);
- greater security to deal with growing violence (Ionides, 1993; Warburton, 1993);
- attention to health issues such as AIDS and teenage pregnancy (Aarsteinsen, 1993);
- sensitivity to gender issues (Lewington, 1993);
- a thorough examination of the way reading is taught (Young, 1993);

- a primary focus on the efficiency of the allocation of resources, the performance of the education system, and the appropriateness of current approaches to training (Lortie, 1990),
- greater attention to cultural differences between immigrant groups (Seevaratnam, 1993); and
- better teachers (Strachan, 1993).

The list of special needs and special interests may be unending; however, the power of special interest groups is increasing and their views must be accommodated.

In summation, the popular press is replete with ideas and concepts aimed at improving education, either from a self-interest point of view, or generated by a distrust with aspects of the current system. These are useful as societal benchmarks as to where the public consciousness is on educational change. In order to get a sense of where the policy makers' consciousness is, and whether there is a similarity of concern with the public, the following literature is instructive.

Government Studies and Agency Reports

Numerous studies and reports are generated by national organizations and agencies of the federal government, some specific to education, others making pointed reference to aspects of education in a broader context.

Prominent among the reports are those of the Prosperity Secretariat, a creation of Industry, Science and Technology Canada and the Employment and Immigration Commission. In its 1991 document entitled Learning well...living well, the following reforms were recommended: committing to national goals and objectives; adopting lifelong learning; linking basic skills to international competitiveness; aiming for excellence and effectiveness in the systems; developing closer links between education and the private sector; promoting social equity by addressing needs of special groups; and encouraging efficiency in the total system.

A second document, Inventing our future: An action plan for Canada's prosperity (Prosperity Secretariat, 1992), recommended the creation of "a Canadian forum on learning" to define education goals for the country and promote innovation and partnerships to support excellence in education. It also recommended competency-based systems for all levels of education and training to define the knowledge and skills acquired.

Finally, the Steering Group on Prosperity produced a 1992 document as a result of a national consultation entitled National round table on learning: Summary of proceedings. In this document, 83 specific recommendations are grouped into the seven major challenges for change:

1. providing choice in what people can learn;
2. greater choice in where, when and how people learn;
3. adult training and continuous learning;
4. building coherence;
5. maximizing the potential in learning technologies;

6. changing values and attitudes, i.e., instilling a new attitude toward learning, encouraging quality and achievement, strengthening interest in maths and science and technology, making learning relevant, and sharing responsibility; and

7. inclusiveness, i.e., equitable access to quality opportunity.

One important outcome of the Prosperity Initiative has been the creation of a national education consortium to create the Canadian Forum on Learning. The purpose appears to be, in part, to provide an outlet for developing a national consensus on such issues as educational standards, goals and teacher training (Lewington, 1993). The "federal learning strategy" that is currently being prepared calls on the federal government to set national standards and targets to improve the quality of education and training, to mobilize private and public-sector activities in support of a "learning culture" in Canada, and to redirect federal dollars already spent on education to fulfilling national education goals (Lewington, 1993).

Equally prominent is the report from the Economic Council of Canada (1992) entitled A lot to learn in which a number of serious concerns and recommendations are articulated. According to the Council, input variables such as student-teacher ratios, teacher education, teacher experience, teachers' salary, and expenditures per pupil are of marginal relevance in determining success. Simpson (1992) synopsizes in this manner.

> More consequential is the structure of the curriculum, the standards expected of students, the feedback they receive through test results, parental guidance and a generalized respect for learning and achievement in society. These have all been eroded by changed family patterns, and the practical application of wrong-headed theories rejected everywhere but in North America (p. A20).

At its termination in 1992, the Economic Council of Canada was chaired by Maxwell (1992) whose opinion is that "much needed educational reforms won't come about without encouragement and assistance from employers, who stand to gain the most from them" (p. 39). Maxwell states that what is needed is an authentic Canadian model of education that would blend the best elements of the German and Japanese. In Maxwell's proposed Canadian model, there is:

- informal liaison between employers and schools, eg., visits to worksites, visits by employers;
- employer support for classrooms, eg., loans and donations of equipment, participation in course design, assistance in certification of graduates; and
- formal ties between employer and schools, including work teams for co-operative education and work-experience terms for teachers.

In addition to these agencies, several organizations have tried to launch debate on national goals for education, among them the Canadian School Boards Association, the Corporate Higher Education Forum, and the Council of Ministers of Education.

The Literature on Educational Reform

Literature on educational reform, that which pertains to education in and for the future, is written largely by academics and educators. While the variety and extent of theories is varied and extensive, the following is a summary of some views of the educational academic community, concerned outsiders, and concerned insiders or practitioners.

Academics on Educational Reform

One source of literature on educational reform is the academic community specifically related to education. The following are three different views of educational change from that source.

In Schools for the 21st century: Leadership imperatives for educational reform, Schlechty (1991) argues for "restructured schools" based on the concept of the changing nature of work, and hence the changing purpose, or intended outcomes, of the education system. According to Schlechty, who is President of the Centre for Leadership in School Reform in Kentucky, the new purposes for schools revolve around the shift in power, work and wealth-generation from natural resources and brawn to information generation and application. The purpose of Schlechty's restructured school system is to get students actively engaged in working on and with knowledge; therefore, the role of students changes from simply receiving knowledge to producing it as well, and the outcome of the system is student success rather than gradations of failure. In order to achieve a different product, the system requires changes in inputs, for example, increased alliances with the external community; altered legislation that reduces restrictions and increases flexibility; a "highly differentiated curriculum aimed at common learning" (p. 70) in place of a common curriculum. As well, a changed product would require changes in processes, for example, in leadership, from management of programs to management of results; in the role of teachers, from being the source of information to being a guide to information sources; in the reward system, from those that impinge on standard of living to those related to life-style. Schlechty depicts a transformed education system in which schools have become knowledge work organizations and completers are adept knowledge workers.

In Beyond education: A new perspective on society's management of learning, Thomas (1991), a Canadian academic, takes a different approach to educational change. An educational system, at any time and place in history, is the result of learning needs; and as society's learning needs have changed dramatically, so must the current system. Thomas notes that, not only have learning needs changed, but learning is not and has never been confined to schools. He would therefore emphasize a closer relationship between the learning that takes place outside the educational system and that which takes place inside, and thereby create a true system of lifelong learning with the barriers presented by age totally removed. Since individuals now need lifelong learning opporunities, the inputs and processes must change to accommodate this and produce a new outcome. Educational reform, according to Thomas, would involve greater government involvement in education in order to explore and exploit the variety of learning needs and opportunities, for individuals and for society. Changes would include, first, intended outcomes that reflect the local and global changes and challenges in society, then an entirely altered set of resources and processes to support a lifelong learning culture. Through a new approach to the management of learning, Thomas would radically transform the entire education system.

For the Centre for Policy Research in Education of the U.S. Department of Education, Elmore and his associates (1990) discuss not one but several approaches to educational reform in Restructuring schools: The next generation of educational reform. For example, Sykes (1990) suggests an increase in teachers' accountability and a decrease in pressures originating outside the school. Gideonse (1990) concludes that the internal structure of schools would be improved if teachers and students were engaged in active inquiry as a method of teaching and learning. Raywid (1990) states that, since site-based management derives from the traditional bureaucratic model of control, client choice models represent a more appropriate change in the locus of control of education. Elmore's three different approaches to school improvement are to introduce teaching and learning practices based on systematic, scientifically validated knowledge; to give educators greater opportunity to exercise skill and judgement and more control over the conditions of their work; and to make schools more accountable to their main clients. In summation, Elmore and his associates would reform the processes and practices in the current system, with essentially the same or enhanced resources, in order to produce an improved version of the same product.

While the academic community which focuses on education has produced varying views on educational reform, others have made a concerted and sometimes comprehensive examination of educational reform.

Concerned Outsiders

The perspectives of outsiders who have made extensive study of educational change varies from the political to the populist. In Politics, markets, and America's schools, Chubb and Moe (1990) of the Brookings Institute in Washington, approach educational reform from a political perspective. According to Chubb and Moe, current governance of public education is characterized by extensive bureaucracy and politics that restrict autonomy, creativity and organizational effectiveness. Chubb and Moe would change to market-driven decision-making, decentralization and choice that is characteristic of private education and business. They present a wholly different system built around school autonomy and parent-student choice rather than direct democratic control, thereby substantially changing the role of all stakeholders. Schools would become legally autonomous and the consumers, parents and students, would be empowered to choose among alternative schools, "aided by institutions designed to promote active involvement, well-informed decisions, and fair treatment" (p. 226). The entire education system of inputs, processes and outputs would change to become completely consumer-driven, primarily responsive to the external environment.

In their analysis of the problems of Canada's formal education system, journalist Lewington and educator Orpwood (1993) offer a large number of recommendations for change in Overdue assignment: Taking responsiblity for Canada's schools. They would change the rigid, hierarchical and politically-controlled nature of the current system, reducing educational elites and shifting power to local schools and community councils. They would involve more stakeholders in order to increase the relevance and accountability of the system; arrive at a national education policy through massive public discussion; abandon "eduspeak" and teaching fads; and incorporate diverse teaching methods and offer flexibilty in order to address the needs of individuals. According to Lewington and Orpwood, public education is paralyzed with problems, and the solution begins with an intensive national debate on what should be taught in schools. Their approach largely embodies reforms of the current system rather than radical transformation.

A sampler of varied educational reform recommendations and examples are found in Educational renaissance: Our schools at the turn of the twenty-first century (Cetron & Gayle, 1991). These authors, who write on behalf of the World Future Society but who focus totally on education, would reform the current system with the following changes. They would decentralize decision-making; create national standards and raise standards at all levels; systematically evaluate teachers and remove those deemed to be incompetent; develop a comprehensive national program of preschools and day-care centres so that all children enter the educational system prepared to learn; enhance technical-vocational training programs and incorporate job training as an alternative to the standard high school curriculum; forge extensive coalitions with business; modify the curriculum substantially; increase the use of computers to include a spectrum of teaching and learning management opportunities unique to computers. In brief, they would undertake reforms to the inputs and processes of the system with the view to producing reformed outcomes and outputs. Cetron and Gayle (1991) list 75 trends in education, but despite this, the system as they view it would not be radically transformed.

In addition to the comprehensive books on educational reform and transformation by academics and concerned outsiders, some reports and projects have been undertaken by organizations and individuals within the Canadian education community.

Practitioners on Educational Reform

Extensive practical experience has formed the basis for some comprehensive recommendations for educational change. One such example is the Canadian Restructured School Plan, a project of the Canadian Vocational Association (1992), in which the following reformed processes and practices to the secondary system are advised. The CVA would implement a change to an open system with flexible entry and exit; a flexible competency-based curriculum in which time is not held constant; a non-graded, continuous progress, individualized approach; an instructional mode that is learner-centered and teacher-managed; an evaluation system which reports student progress in terms of the competencies mastered and the level of mastery reached; a student counselling system in which home room teachers assume a major advisory role; and a professionally-oriented, collegial management model in which teachers are encouraged to function as decision makers. The CVA felt that the current outcomes of the system had to be somewhat changed, as a result of consumer demand, through changed educational processes and practices. These, of course, would require some alteration to inputs, for example, teacher training and teaching materials. The CVA is in the process of obtaining federal finances to implement its reform plan on a limited scale.

A second example is the report, Trying to teach (Alberta Teachers' Association, 1993), which contains recommendations regarding the design and implementation of reforms. It concludes that, in order to maintain the current outcomes, there is a need to reduce the expectations placed on schools, increase the teacher's right to choose appropriate tools, recognize the constraints of group instruction as well as the limits of individualization, and develop a proper system for assessing innovations under controlled conditions by independent evaluators. The Alberta teachers would support some reform but not radical transformation.

Based on his experience as a practitioner, Dixon (1992), in Future schools and how to get there from here: A primer for evolutionaries, argues for a totally new Canadian model of schooling predicated on a new model of childhood. Dixon notes that the traditional students, the primary consumers and the major input or resource, are radically different from those for whom the current system was developed. The changed needs and opportunities of children and youth are not being recognized or met by the current education system. As this input or resource has changed, other inputs and processes must change in order to produce essentially the same intended product of the current system. The most important learning achievements or system outcomes, in addition to basic academic skills, are life skills such as co-operation, leadership, tolerance, adaptability, integrity, initiative, and creativity. In Dixon's future school, the purpose would be to serve all the needs of children not met elsewhere in society with whatever resources are needed to make attendance and achievement feasible, including fees, supplies, food, clothing, housing, living wage, and emotional nurturance. In addition, Dixon stresses that processes and practices must change, for example, from traditional teaching to self-directed and self-propelled learning; from rote learning to exploration and creativity; from competition to co-operation; from mass to individualized education; and from destroyer of self-esteem to builder. In summation, because the consumers of education have changed, Dixon would argue that the producers must transform the system with altered inputs and processes.

In conclusion, individuals and organizations within the formal education community have put words to their thoughts and dreams about educational change based on a wide variety of philosophical approaches to education and to change. The approaches range from alteration of any one system element through to all elements, and the results range from minimal reform to massive transformation based on changes in the external and internal environments of the education system. In reality, all of the literature on educational reform speaks of improved outcomes through reformed inputs and processes, of increased consumer involvement in decision-making, of altered roles for producers, of changes in governance, teaching and learning that might ultimately result in transformation of the education system. The difference is largely one of starting point, whether to determine a changed purpose and outcomes first, to impose or recognize changes in resources and inputs, or to reform the methods of instruction and assessment, then to let the system modify itself.

The Literature on The Future

The literature on the future presents various theories of broad-based global change, trends that lend support to that change and societal reform, theories of societal and organizational change, and specific trends and changes related to education. Writers and thinkers in this genre include Atalli (1991), Celente and Milton (1991), Coates, Jarratt, and Mahaffie (1990), Drucker (1989, 1992, 1993), Ferguson (1980), Gore (1992), Henderson (1991), King and Schneider (1991), Myers (1990), Naisbitt and Aburdene (1990), Ohmae (1990), Ornstein and Ehrlich (1989), Osborne and Gaebler (1993), Popcorn (1991), Suzuki (1989), and Toffler (1980, 1990). An expanded discussion of this literature is not appropriate at this time; the following is a synopsis specific to education.

With regard to the specific application of future trends and issues to the field of education, futurists and proponents of societal change make comments about the inadequacies of the present educational system, and provide recommendations for the future. The trend is towards a massive educational reform reflecting changing attitudes toward the economy and international competitiveness, and the needs of society (Ohmae, 1990; Popcorn, 1991; Myers, 1990). For example, Toffler (1980), with three major futurist books over three decades, repeatedly recommends change in education, stating that "our mass education systems are largely obsolete" (p. 368). Typical of social commentators and writers, Drucker (1989, 1992, 1993) reinforces both the need to transform education and the importance of education in societal change, noting that no other institution faces challenges as radical as those that will transform the school. As do many others, he sees change as inevitable, driven by the changing nature of work, the increasing importance of knowledge and learning, and the innovative use of technology. In summation, futurists argue for a transformed education system on the basis that the overwhelming degree of societal change makes attempts at reform almost irrelevant.

Trends in Education

Transformation of the education system, according to futurists, may be well under if the following trends are taken together. These trends are particularly interesting in that they relate to the education system as a whole rather than to the individual elements of input, process, and/or output.

A first trend is the increasing involvement of business and industry in the education realm. Celente and Milton (1990) note that business and industry will drive the reform movement because they are not getting the product they need from the system. Coates, Jarratt and Mahaffie (1990) link changes in education to changes in the workforce. For example, because of increased diversity of gender, ethnicity and age in the workforce, more seniors, with early retirements, longer lifespans and unused talents, may be involved as teachers and volunteers; fewer women will see teaching as their only or best career choice; and the teaching force will be a more appropriate ethnic blend for Canada's multicultural society. As well, because of a reintegration of home life and worklife, employers may provide learning resources to employees and their families. Because of the changing nature of work, and hence the training and re-educating for a knowledge-based work force, new critical skills that are emerging must be integrated into the curriculum. The distinctions between employers, teachers, students and workers will blurr, as will the distinction between industry and education, a significant transformation. Elements of the labour market, i.e., business, labour and workplace changes, are becoming contributors to all elements of the education system, in providing supplimentary resources, changed expectations for outputs, changed instructional and administrative practices.

A second major trend in education is the increasing use of computers and communications technology made possible by microtechnology. Changing the inputs to the education system are increased numbers and varieties of technologies, for example, portable computers and CD-ROM libraries. Too, in terms of process, technology is changing instruction, assessment and administrative practices. Drucker (1993) says that the technological revolution "will transform the way we learn and the way we teach within a few decades. It will change the economics of education. From being almost totally labor-intensive, schools will become highly capital-intensive" (p. 194). Drucker says that the role of technology will be to force us, not to do old things better, but to do new things.

The use of technology in individualizing instruction and diagnosis is a symptom of a larger trend towards individualization in education, a third trend in the transformation of the education system. Attali (1991) points out that microchip-based technologies have opened the way for the unprecedented portability of services, increasing individualization of services such as education. He notes that "the portable objects of the future will greatly weaken institutions, professions, and bureaucracies by permitting the individual an extraordinary degree of personal autonomy, mobility, information, and power" (p. 11), and this may mean totally restructuring the learning environment to accommodate consumer-driven individualism. Drucker (1993) states that the central purpose of the school is individual learning, and the way to achieve this is to focus on the strengths of individuals and to work towards excellence and achievement. The individual, rather than classes of students, is central to the knowledge society because, as Drucker (1993) says, "knowledge is always embodied in a person; carried by a person, created, augmented, or improved by a person; applied by a person; taught and passed on by a person; used or misused by a person" (p. 210). Focusing on the individual, both in response to consumer demand and to available technologies, would transform the inputs, processes and outcomes of the education system.

A fourth trend may be reduced bureaucracy within the education system. Toffler (1990) points out that: "The forces of the Third Wave favor a democracy of shared minority power; they are prepared to experiment with more direct democracy.... They fight for less standardization, more individualization in the schools" (p. 437-438). This may mean flattening the management structure in a manner similar to that currently being undertaken by business and industry. Clearly it means empowering all participants in the education process.

A fifth trend is increased links with the media. According to Toffler (1990), the media system of the future will encompass six principles: interactivity, mobility, convertibility, connectivity, ubiquity, and globalization. Toffler says that to ignore the relationships between the educational system of the future and the media system of the future is to cheat learners who will be formed by both.

A sixth trend is the concentration and concern for literacy, both basic literacy worldwide and functional literacy in developed countries. Throughout the world, education remains a major goal for development as well as a means for meeting goals for health, higher labour productivity, stronger economic growth, and social integration. The increasing levels of technological "savvy" demanded by modern life often are more than people are prepared to meet, even in the most modern societies.

Education systems are being encouraged to provide a more literate product, completers who have the necessary literacy skills to fully participate in their communities. This will require increased resources and altered processes, including significant social policy changes.

These general trends, or changes-in-progress, are common to most futurist literature. Taken together, they point to a radically transformed education system. In addition to these general trends, the futurist literature contains specific recommendations for change.

Recommendations for Change

One primary area of recommended change is in curriculum; however, there are a variety of directions this could take. Naisbitt and Aburdene (1989) suggest that there will be a renaissance in the arts, i.e., a need to reexamine the meaning of life through the arts following on the evolution of an affluent information economy. From a different perspective, Ornstein and Ehrlich (1989) state that a basic education should centre on understanding the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded, history; our relationships with the environment; our society; our moral judgements; our possibilities. Drucker (1992) would construct a curriculum approach "to equip students with the elementary skills that would make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career" (p. 5). Cetron and Gayle (1991) would create a common core curriculum embodying the knowledge and skills required for modern life. Drucker (1993) contends that new challenges, new issues and new unprecedented questions about "the knowledge society's representative, the educated person" (p. 210) will require that new skills and abilities become part of the curriculum: global issues, the awareness and appreciation of other cultures, world history, and futurist issues and planning.

Many futurists call for increased attention, in the science curriculum, to environmental problems (Suzuki, 1989; Gore, 1992; Henderson, 1991); others call for active involvement in environmental preservation by the school system (Gore, 1992; Brown, Flavin, & Kane, 1992); still others insist that environmental issues be integrated into all aspects of the curriculum (Ornstein & Ehrlich, 1989). From a different perspective, Attali (1991) states that:

> since the world now changes more in a decade than it once did in millennia, the most important concept to get across in schools is that much of whatever is taught will soon probably become obsolete. That rate of change is, if anything, increasing; therefore adapting to change must be the center of any new kind of teaching. The idea of emphasizing "eternal truths," providing primarily a fixed curriculum of reading, writing, mathematics, history, the classics, and the like, ought to give way to a dual emphasis: more

> teaching of "fleeting truths" and the understanding that the only thing constant in life is change itself (p. 217).

From the literature of the future in general and specific to education, there is much advice about the nature of curriculum and instruction for the future.

In a more general sense, King and Schneider (1991), writing for the Club of Rome, state that education for the future requires:

1. acknowledging the most important task to be learning how to learn;
2. dealing with the plethora of knowledge;
3. preventing the anachronism of new knowledge and "old" teachers, teaching what and how they were trained years ago;
4. correcting the impression of unsuitability that young people have about the traditional education they receive;
5. stimulating learning change as an objective of education;
6. giving status and rewards to the teaching profession and improving teacher education;
7. fostering lifelong learning; and
8. developing a multidisciplinary approach because each societal problem has technical, economic, social, political, and human elements.

These are guidelines for reforming the inputs, processes and outcomes of the education system in order to address the global problems facing contemporary society.

The problems and opportunities of the emerging knowledge society, according to Drucker (1993), requires schools with the following five specifications. Future schools should have the capacity to provide universal literacy of a high order, including communications, numeracy, science and technology, foreign languages, and interpersonnal skills. Secondly, they should have the ability to imbue students on all levels and of all ages with motivation to learn and with the discipline of continuing learning. Third, future schools should have the facility to be an open system, accessible both to highly educated people and to those who, for whatever reason, did not gain access to advanced education in their early years. Fourth, they should embody the expertise to impart knowledge both as substance and as process. Finally, they should have the flexibility and comprehensibility to encompass learning experiences inside and outside of the formal education system, i.e., all organizations in society must become institutions of learning and teaching. Drucker and Thomas, among others, paint the same picture of a transformed education system.

In The Aquarian conspiracy, which has become a seminal futurist work, Ferguson (1980) generates an encompassing list of recommended transformations to the education system. In terms of outcomes, she wants to see a completer who has learned how to learn, to ask questions and pay attention to the right things, be open to and evaluate new concepts, to have access to information. For Ferguson, learning is the process, not the product of the system. In terms of processes and practices of the education system, Ferguson would change the educational bureaucracy to an egalitarian structure; remove age segregation, lock-step progress, compartmentalization; emphasize prior learning and individual experiences; encourage guessing and divergent thinking; provide whole-brain education, augmenting left-brain rationality with holistic, nonlinear, and intuitive strategies; remove labeling (eg., remedial, gifted, minimally brain dysfunctional); stress an individual's performance in terms of potential rather than norms; complement theoretical and abstract knowledge with experiment and experience; encourage community input, even community control. Unlike other futurists, Ferguson questions the increasing reliance on technology and the resulting dehumanization; for her, the human relationships between teachers and learners are of primary importance. In fact, Ferguson would promote a change from the teacher imparting knowledge as a one-way street, to the teacher as learner, too, learning from students. All of these changes would result in a transformed system where education is not seen as a social necessity for a certain period of time, used to inculcate minimum skills and train for a specific role, but as a lifelong process, one only tangentially related to schools.

In order to bring about change, Osborne and Gaebler (1993) present the thesis that government and governance must become more entrepreneurial. In that the education system is government-controlled, Osborne and Gaebler argue that educational governance must change to promote competition between providers; empower citizens and communities as decision-makers; measure performance and focus on outcomes; be driven by goals and mission rather than rules; redefine its clients as customers and offer them choices; be proactive regarding systemic problems; put energy into earning money, not simply spending it; embrace participatory management; give preference to market mechanisms; and catalyze all sectors of society into action. More specifically, according to Osborne and Gaebler (1993), the public education system should be restructured to incorporate more choices for parents and students; a system of accountability that focuses on results rather than on compliance with rules and regulations; decentralization of authority and decision-making responsibility to the school site; a personnel system that provides real rewards for success with students and real consequences for failure; and active, sustained parental and business community involvement. Largely through these changes to process, a transformed education would emerge.

In conclusion, it becomes clear that there is a vast amount of literature with vast numbers of recommendations for change. The above has been intended as a sampling of futurist literature and a sampling of the projected changes to elements of the education system. The benefit of incorporating this literature is that seemingly unrelated societal changes merge to provide a picture of transformed systems, including the education system.

A Synthesis of the Literature

For purposes of this study, the "system" of education in Canada has been divided into the three components of input, process, and output, each with a significant number of sub-categories. The recommendations for change, from each and all of the literature sources, can be slotted into these categories to form a summary of the recommended changes to Canada's education system. It is understood that the "change" that is recommended is obviously something different from the present; however, in most cases, the present circumstance is implied only.

1. The Inputs and Resources of the System

With regard to each of the following sub-categories of system inputs and resources, the following changes are recommended for implementation.

1.1 Entering students

- 1.11 early intervention programs to identify and support poor children at risk of educational problems
- 1.12 college and university entrants with adequate literacy skills

1.2 **Personnel** (paid and volunteer instructional, administrative and support staff)

- 1.21 significant changes in teacher preparation, eg., work experience in business for skills development
- 1.22 more seniors, with early retirements, longer lifespans and unused talents, involved as teachers and volunteers
- 1.23 more women in administration
- 1.24 greater ethnic blend in the teaching force representative of Canada's multicultural society
- 1.25 teachers and professors bring a broader range of life experiences

1.3 **Finances**

- 1.31 funds for public education are reduced
- 1.32 voucher system for parents and adult students to choose schools
- 1.33 schools and universities encouraged to earn money by attracting more students or providing new services
- 1.34 increased user fees, eg. university fees
- 1.35 significant financial contributions from business and industry

1.4 **Available and unused resources**

- 1.41 more volunteer instructors and managerial assistance
- 1.42 extensive fieldtrips, apprenticeships, relationships with community businesses, visiting experts
- 1.43 systematic peer tutoring
- 1.44 established mentoring systems with community adults

1.5 Physical facilities

1.51 from a physical structure in which most instructional areas are of uniform size to one in which the facility enables large and small group instruction as well as independent study

1.52 from classrooms designed for efficiency and convenience, to concern for the environment of learning: lighting, colors, air, physical comfort, needs for privacy and interaction, quiet and exuberant activities

1.53 increased use of existing community facilities

1.6 Technological equipment for management

1.61 extensive use of computer-managed instruction

1.62 current rather than outdated machines and processes

1.7 Technological equipment for instruction

1.71 extensive use of computer assisted instruction

1.72 access to remote data bases

1.73 cognitive-mapped learning system

1.74 increased use of portable and microtechnologies eg. entire dictionaries on videodiscs

1.75 use of the camcorder, merged with computer, for the permanent recording and retrieval of information

1.76 use of technology, CD-ROMs and computers in every school

1.8 Student support services

1.81 more direct support to single mothers where poverty is a chronic problem to encourage parents to upgrade literacy skills

1.82 more funding for adult education and literacy programs with flexible hours

1.83 daycare (children and elders) for all adult education institutions

1.9 Staff support services (professional development, teaching assistance, peer support, professional support services)

1.91 human resource development is central to system-wide change; extensive resources are allocated

1.10 Curriculum and teaching materials

1.101 a more traditional academic curriculum

1.102 province-wide sequential curriculum for each subject and grade

1.103 strengthened math and science offerings

1.104 more curriculum time and materials related to history

1.105 increased emphasis on technical reading and writing skills

1.106 more emphasis on physics (the underpinning of electronics)

1.107 less emphasis on algebra

1.108 more access to bilingual education

1.109 introduction of global studies (eg. foreign languages and cultures)

1.110 emphasis on the arts

1.111 increased attention, in the science curriculum, to environmental problems

1.112 environmental issues integrated into all aspects of the curriculum

1.113 the curriculum is matched to "real life": conflict resolution, financial and emotional management, etc.

1.11 Adminstrative structure (local, provincial, national)

1.111 federal/national department of training and education, to set standards in education, to define educational goals and to promote innovation

1.112 amalgamation of small school boards

1.113 provincial coordination rather than local control of postsecondary educational institutions

1.114 provincial governments and school boards to set minimum standards, measure performance, enforce goals such as social equity, and establish the financing mechanisms necessary to achieve their standards and goals

1.115 schools run on a contract or voucher basis, by many different organizations: teachers, colleges, even community organizations

1.116 government measures and publicizes many different kinds of results, eg. test scores, student satisfaction surveys, dropout rates, that the consumer could use to make choices in schools

1.117 site-based management for all institutions

1.12 Stated goals and plans (for students individually and collectively, for local and national goals)

1.121 national educational goals and objectives are established

1.122 a lifelong learning culture is established

1.123 basic skills education is linked to international competitiveness

1.124 social equity is promoted by addressing the needs of special groups

1.125 concentration and concern for literacy, both basic literacy worldwide and functional literacy in developed countries

1.126 the purpose of schools is to be a knowledge-work organization where students learn to manipulate and generate information

1.13 Time (semesters, commencement and completion periods)

- 1.131 longer school year (more days)
- 1.132 year-round school (3-4 semesters)
- 1.133 never-closing school (eg. shifts of children, followed by shifts of workers retraining, followed by nightshift of users of the expensive computer and communications systems)
- 1.134 completely modularized programs
- 1.135 open-entry/open-exit programs for all
- 1.136 lifelong learning opportunities institutionalized

1.14 Organizational culture (values and norms, interpersonal relationships and communications)

- 1.141 ongoing research and sharing of information about effective instructional techniques within and between schools
- 1.142 a generalized respect for learning and achievement in society modelled by instructors and administrators
- 1.143 each school defines and pursues its own mission
- 1.144 parents and students viewed as customers
- 1.145 less standardization, more individualization in the schools

1.15 Institutional organization (size, structure, decision-making)

- 1.151 public schools reflect the will of parents through parent-school councils and advisory boards to provincial ministries
- 1.152 parents and students are directly involved in administration
- 1.153 teachers function as decision-makers is a professionally-oriented, collegial administrative model
- 1.154 reduced bureaucracy within the education system

1.16 Vocational education

1.161 there is more and different vocational training, perhaps like that of the German apprenticeship system

1.162 access is improved to technical and vocational programs

1.163 vocational programs have disappeared due to cost and declining enrollments

2. The Processes and Practices in the System

2.1 Student assessment (pre- and post-instruction)

2.11 objective evaluations in each subject area set against provincial, national and international standards

2.12 a system of national testing is established

2.13 students are encouraged to assess their own performance, largely through technological means

2.14 portfolio assessment of student work

2.15 from an evaluation system which reports student progress in percentages, or letter grades, to one which reports on the competencies mastered and the level of mastery reached

2.16 from a structure which compares student achievement with others in the group, to achievement based on one's own progress;

2.17 from concerns with norms to concern with the individual's performance in terms of potential, emphasizing an interest in testing outer limits and transcending perceived limitations

2.18 a competency profile describes what a graduate should "look like"

2.2 Student recruitment and program marketing

2.21 special programs for at-risk students

2.22 programs combining high school and college/university courses

2.23 programs to enhance the value placed on vocational education

2.3 Instructional methods and strategies

2.31 focus is on direct skills instruction

2.32 more co-operative or group-directed learning

2.33 more individualized learning

2.34 competency-based systems for all levels of education and training to define the knowledge and skills acquired

2.35 from an instructional mode that is teacher-centered to one that is learner-centered and teacher-managed

2.36 from an emphasis on content, acquiring a body of "right" information, once and for all, to an emphasis on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information

2.37 from learning as a product, a destination, to learning as a process, a journey

2.38 from a relatively rigid structure and prescribed curriculum, to a relatively flexible structure and a belief that there are many ways to teach a given subject

2.39 from the situation where guessing and divergent thinking are discouraged, to the situation where guessing and divergent thinking are encouraged as part of the creative process

2.310 from an emphasis on analytical, linear, left-brain thinking, to whole-brain education which augments left-brain rationality with holistic, nonlinear, and intuitive strategies

2.311 from the teacher imparting knowledge as a one-way street, to the teacher as learner, too, learning from students

2.312 from primary reliance on theoretical, abstract "book knowledge," to theoretical and abstract knowledge heavily complemented by experiment and experience, both in and out of the classroom

2.313 the curriculum and instructional material is reorganized to emphasize process, not just content, emphasizing the concept that knowing how to find information is as important as the information itself

2.314 non-traditional courses blend math and science, or English and history, so that students learn not only how to make connections across subject areas but to apply them to the outside world

2.315 a multidisciplinary approach is applied because each problem facing humanity has technical, economic, social, political, and human elements

2.316 more teaching of "fleeting truths" and the understanding that the only thing constant in life is change itself

2.317 increased computer-related training and information-processing skills training with the additional benefit of learning-by-discovery

2.4 Formal program plans and intended outcomes

2.41 growing variety in specialty schools, eg., science and technology, arts, international baccalaureate, modern languages, international business and law

2.42 student success is the intended outcome; quality indicators focus on student motivation and learning

2.5 Informal learning opportunities and resources

2.51 experiential learning is valued and validated

2.6 Supplemental programs (sports, enrichment, remedial)

2.61 from labeling (eg., remedial, gifted, minimally brain dysfunctional) which contributes to self-fulfilling prophecy, to labeling used only in minor prescriptive role and not as a fixed evaluation that dogs the individual's educational career

2.62 full integration of students with special needs into the general school system

2.7 Student learning management (individualization, streaming)

2.71 gradeless education, or program continuity, which encourages students to work at their own level of ability instead of meeting specific academic standards

2.72 destreaming in high schools

2.73 open system with flexible entry and exit

2.74 a high choice system with a vast expansion of program diversity

2.75 from a hierarchical and authoritarian structure, rewarding conformity and discouraging dissent, to egalitarian structure where candor and dissent are permitted, and autonomy encouraged

2.76 from lockstep progress with emphasis on the "appropriate" ages for certain activities, age segregation and compartmentalization, to flexibility and integration of age groupings in which individuals are not automatically limited to certain subject matter by age

2.77 from priority on performance, to priority on self-image as the generator of performance

2.78 from emphasis on the external world where inner experience is often considered inappropriate in the school setting, to a circumstance where inner experience is seen as a context for learning

2.79 a National Learning Credit Bank encourages portability of credits

2.710 individual learning is tracked through a personal lifelong improvement record

2.8 Logistics (class size, class length, semester length)

2.81 smaller class sizes

2.82 extended the school year, increased time on task

2.83 lengthening of the school year to teach "new skills" of technological competence

2.84 flexible school day

2.85 flexible school year

2.86 flexible school schedule

2.87 flexible facilities

2.9 **Student management** (discipline, motivation, rewards, counselling, retention)

2.91 higher standards expected of students

2.92 more direct feedback to students

2.93 from a student counselling system which is dependent on one or two professional guidance counsellors, to one in which "home room" teachers assume a major counselling or advisory role

2.94 career guidance programs geared to future employment needs and opportunities

2.10 **Staff management** (evaluation, incentives, recognition, career paths, retention)

2.101 increased rewards for the best teachers

2.102 teachers stratified into instructors, career teachers and lead teachers as a way of rewarding effort

2.103 teachers forced to upgrade in order to prevent the anachronism of new knowledge and "old" teachers, teaching what and how they were trained years ago

2.104 increased status and rewards to the teaching profession and improved teacher education

2.105 a personnel system that provides real rewards for success with students and real consequences for failure

2.11 Administrative behavior (teacher supervision, community interaction, learner involvement, planning, responsiveness)

- 2.111 a proper system for assessing innovations under controlled conditions by independent evaluators
- 2.112 from bureaucratically determined administration, resistant to community input, to encouraging of community input, even community control
- 2.113 schools seek to prevent problems rather than trying to remediate failure, working with parents and the community to solve larger problems
- 2.114 administrators inspire loyalty to new organizational principles and vision rather than to individual leaders, i.e., leadership by results

2.12 Involvement with community (parents and business)

- 2.121 more business involvement in education
- 2.122 a curriculum policy advisory board with representatives from parents, business, labor, trustees, post-secondary education, and teachers
- 2.123 more work programs, i.e., more co-operative education programs

2.13 Links to other programs and services

- 2.131 employers provide learning resources to employees and their families

2.14 Program evaluation, development and accountability

- 2.141 accountability through testing at every level
- 2.142 excellence, effectiveness and efficiency demonstrated in the total system
- 2.143 a system of accountability that focuses on results rather than on compliance with rules and regulations
- 2.144 education system is consumer-driven

2.15 Interaction with the external environment (leadership, future orientation, responsiveness to government and to societal stresses)

2.151 public awareness of the critical link between education and a successful society

2.152 integration of economic and education priorities

2.153 integrated jobs and education strategy that draws heavily on business, communities and the school system, based on the assumption that learning is the new competitive advantage

2.154 educational entrepreneurialism, eg.
- women in science and mathematics awareness program for parents with girls age 8 to 14;
- Workplace 2000 designed to make parents aware of future skill needs in the workplace
- career club which provides systematic exposure of grades 5 and 6 students to engineering, lab technology, aeronautics, entrepreneurship and other careers;

2.155 increased links with the media

2.156 active involvement in environmental preservation

3. System Outputs or Outcomes

3.1 Individual students (achievements, changes, attitudes, skills)

3.11 students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career

3.12 students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded, history; our relationships with the environment; our society; our moral judgements; our possibilities

3.13 students understand that the most important task is learning how to learn

3.14 students develop strategies for dealing with the over-supply of knowledge

3.15 student acquire the attitude that learning change is an objective of education

3.16 students learn that education is a lifelong process, one only tangentially related to schools

3.2 Students collectively (opportunities, responsibilities)

3.21 there is a shift in our understanding of ourselves as separate individuals, each seeking our own welfare, to an understanding of how we fit collectively into social, biological and physical environments

3.22 increased self-education and awareness of the growing interdependencies of economies, communities, environments and communications might be the opportunity to pursue several different careers at once

3.3 Local community

3.31 self-education / lifelong learning is life-empowering, concerned with personal growth and participation in community, leisure, and creativity

3.4 Canadian society (short-term, long-term)

3.41 there is a common understanding of the intended product of the education system in Canada

3.42 through increasing human-rights education, Canada is building a tolerant, equitable, and just society

3.43 through global education, individuals realize that "there are no categorical divisions in society, the global economy, the environment" and this leads to new worldviews without social and environmental exploitation

3.5 Employers

3.51 employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills

3.52 a standard test for entry-level job applicants that assesses both their academic skills and personality traits

3.53 new critical skills that emerge are integrated into the curriculum

3.54 training and education budgets stay high as corporations stretch for new results

3.55 corportions reach deeper into the educational system to influence the quality of its supply of workers

3.6 Teachers, support staff and volunteers

3.61 from increasing reliance on technology (audiovisual equipment, computers, tapes, texts) and the resulting dehumanization, to appropriate technology, with human relationships between teachers and learners of primary importance

3.7 Administrators and institutions

3.71 employees/union committees control the money for training

3.8 Government departments, funders and policy makers

3.81 re-training is a prerequisite for UI benefits

3.82 training is mandatory for regulated industries and a condition of contracts

This list is the culmination of the literature review. It forms the basis for the questions in the Delphi study and addresses the first research question in the study.

Chapter 5

METHODOLOGY

The methodology for data gathering and analysis in this study was a modified policy Delphi using computer and communications technology. The data that were gathered and analyzed are informed personal opinions. The gathering and analysis processes followed the steps or rounds of the Delphi technique which is defined by Linstone and Turoff (1975) as "the art of designing communication structures for human groups involved in attaining some objective" (p. 489). In this case, the objective was a forecast or conjecture of what changes may be made to the Canadian education system in the near future.

Forecasting

The Delphi technique, which is the methology employed in this study, is a specific form of forecasting. Other types of forecasting include historical analogy, trend projection, polling, scenario building, trend impact analysis, technological assessment, simulation and others (World Future Society, 1977). Forecasting is defined by Dunn (1981) as a method of producing information about future states of society on the basis of information about the nature of policy problems. In the case of this study, the "policy problem" relates to the unknown and unplanned future state of education in Canada.

Forecasting methods are loosely categorized by Dunn as being a projection based on the extrapolation of current and historical trends into the future; a prediction based on explicit theoretical assumptions; or a conjecture based on subjective judgements about future states of society. Delphi, which involves gathering the subjective judgements of informed individuals, therefore generates a conjecture; in this case, the conjecture is about the future state of Canadian education. Dunn (1981) notes that future states can be:

1. potential futures or alternative futures, i.e., societal states that might occur as distinguished from those that eventually do occur;
2. plausible futures which, on the basis of assumptions about causation in nature and society, are likely to come about if policy makers do not intervene to redirect the course of events; or
3. normative futures which are potential and plausible consistent with analysts' conceptions of future needs, values, and opportunities.

The Delphi technique does not formally incorporate any authority for intervention; therefore it results in a depiction or conjecture of a potential future.

The value of forecasting, according to Dunn (1981), is that it provides information about future changes in policies and their consequences; permits greater control through understanding past policies and their consequences; and results in clarification of what values can and should guide future action. This relates both to the rationale and the practical significance of the study.

According to Dunn (1981), the object of a forecast, that is, the specific point of reference of the conjecture, may be one of four things: consequences of existing policies, consequences of new policies, contents of new policies, or behavior of policy stakeholders. In this study, the object of the forecast is, indirectly, the content of different or alternative policies, those needed to implement the changes forecast by the study participants. As there is no authority to generate or implement new policies, the object of forecasting the content of new policies and practices provides the theoretical significance of the study.

The basis of a forecast is the set of assumptions used to estimate the content of the new policies: either trend extrapolation, theoretical assumptions, or subjective judgement. Again, Delphi incorporates subjective judgement as the basis of the forecast. Subjective judgement, according to Dunn (1981), refers to immediate knowledge based on insight rather than inductive or deductive reasoning. Such judgements are often based on retroductive logic, that is, the process of reasoning that begins with claims about the future and then works backward to the information and/or assumptions necessary to support claims. Retroductive logic is used, by individual Delphi participants in this study, to create a scenario of a preferred future for the Canadian education system from which the changes are extrapolated.

In summation, the Delphi is a form of intuitive forecasting, as opposed to extrapolative or theoretical forecasting. In the case of this study, the basis is subjective judgement and the product is conjecture about a possible future state.

The Delphi Technique

Originally intended for forecasting future events, the Delphi has become a multifacetted research tool, which "in its design and use... is more of an art than a science" (Linstone & Turoff, 1975, p. 3). Operationally defined, the Delphi technique is an intuitive forecasting procedure for obtaining, exchanging and developing informed opinion about future events (Dunn, 1981). The procedure, simplistically, is to begin with a general question and, through subsequent rounds of questioning, provide a multifacetted and ordered answer.

From the Conventional Delphi technique, a wide variety of processes have developed, leading to the conclusion that there is no one way to conduct a Delphi. As well, a number of different forms and purposes have evolved with different labels.

The Policy Delphi

One Delphi mutation, the "policy Delphi," embodies significant modifications to the Conventional Delphi. The principles of the Conventional Delphi technique, articulated by Dunn (1981, p. 196), are the following:

1. anonymity: all experts or knowledgeables respond as physically separated individuals whose anonymity is strictly preserved;
2. iteration: the judgements of individuals are aggregated and communicated back to all participating experts in a series of two or more rounds, thus permitting social learning and the modification of prior opinions;
3. controlled feedback: the communication of aggregated judgements occurs in the form of summary measures of responses to questionnaires;
4. statistical group response: summaries of individual responses are presented in the form of measures of central tendency (the median), dispersion (the interquartile range), and frequency distributions (curves and frequency polygons); and
5. expert consensus: the central aim is to create conditions under which a consensus among experts is likely to emerge as the final and most important product.

To these principles, the policy Delphi adds several new principles:

1. selective anonymity: participants remain anonymous only during the initial rounds, then may be asked to debate their views publicly;
2. informed multiple advocacy: the process for selecting participants is based on criteria of interest and knowledgeableness, rather than on "expertise" per se; an attempt is made to select as representative a group of informed advocates as may be possible;
3. polarized statistical response: in summarizing individual judgements, measures that purposefully accentuate disagreement and conflict are used; and

4. structured conflict: an attempt is made to use disagreement and dissension for creatively exploring alternatives and their consequences; efforts are made to surface and make explicit the assumptions and arguments that underlie contending positions; the outcomes are nevertheless completely open, meaning that consensus as well as continuation of conflict might be results of the process.

Additional features of the Delphi technique are equal flow of information to and from all, and minimizing of psychological effects on respondents.

The use of a policy Delphi is typically to inform the creation of social policy. According to Linstone and Turoff (1975), "policy Delphi is an aid to judgement and not a decision-making tool" (p. 202). In this capacity, the policy Delphi seeks to determine desirability (effectiveness or benefits), feasibility (practicality), importance (priority or relevance), and confidence (in validity of argument or premise) of policy options (Linstone & Turoff, 1975, p. 90-91). Consensus may or may not result; it is advice and policy directions that are sought for judgement purposes.

According to Dunn (1981), a policy Delphi typically embodies several types of questions, i.e., forecasting items (probability of occurrence), issue items (rank issues in terms of importance), goal items (judgements about desirability of goals), and options items (alternative courses of action).

The Modified Policy Delphi

For purposes of this study, the traditional policy Delphi is modified in three ways. The first modification regards anonymity of participants. A principle of the policy Delphi is selective anonymity: participants remain anonymous only during the initial rounds, then are asked to debate their views publicly. The modified Delphi employed in this study reverts to the total anonymity of participants, a characteristic of a Conventional Delphi. The reason for this is the lack of utility or feasibility of a face-to-face debate at the end of the study.

The second modification is a significant procedural one. The traditional policy Delphi embodies a confrontational stance through polarized statistical response which purposefully accentuates disagreement, and through structured conflict in which efforts are made to surface and make explicit the assumptions and arguments that underlie contending positions. The purpose of this study is to attain consensus and a particularly cogent underlying philosophy is that collaboration is a both possible and desirable; nothing is served in this study by seeking confrontation. Therefore, the modified policy Delphi employed in this study reverts to the Conventional Delphi principle of expert consensus, i.e., the creation of conditions under which a consensus among experts is likely to emerge as the final and most important product.

The third modification is the experimental use of technology, the attempt at a computerized policy Delphi. Although the process has been conceptualized, its use has not been widely reported; therefore, there is no readily-available precedent on which to base the processes of this study.

The actual steps or rounds of the modified policy Delphi reflect these adaptations. Thus, the steps of the Delphi technique employed in this study, based on the series of interrelated steps listed by Dunn (1981) are as follows.

Step 1: Issue specification

Lists of issues are developed by the researcher based on a thorough familiarity with the issue through the literature review. These lists are part of the first and subsequent questionaires; and respondents are free to add or delete issues.

Step 2: Selection of respondents

The respondents in the Delphi should represent conflicting positions and should be as different as possible, not only in terms of positions attributed to them, but also in terms of their relative influence, formal authority, and group affiliation (Dunn, 1981). The Delphi participants, then, are individuals who come from and represent diverse stakeholders groups, and who are informed respondents.

Step 3: Questionnaire design

The first-round questionnaire, the only one which can be developed at the outset, is a combination of relatively unstructured, open-ended items, and several issue items, i.e., questions which ask that respondents rank issues in terms of importance. As per the principles of a policy Delphi, there is a restriction on neutral responses in order to move to consensus.

Step 4: Analysis of first-round results

This step is an attempt to determine the initial position on issues through summary measures that express central tendency and extent of dispersion. These measures are used to eliminate items, to priorize items, and to communicate results of the first round.

Step 5: Development of subsequent questionaires

Step 6: Final analysis

In summary, the Delphi technique which is utilized in this study is a combination of the Conventional Delphi and the policy Delphi, both in terms of principles and processes.

Rationale

In order to address the purpose of this study, i.e., a forecast of the future state of education in Canada, the modified policy Delphi is a most appropriate methodology. The reasons for this choice of research paradigm are related to the strengths or features of the Delphi technique, the nature of the problem addressed, and the number and diversity of stakeholders groups as reflected in the conceptualization of the Delphi put forward by Linstone and Turoff (1975).

> Delphi may be characterized as a method of structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem (p. 3).

Fundamental to this study is the notion that there are a large number of stakeholder groups who are going to have diverse opinions about education in Canada, the delineation of which is a complex problem.

In choosing to use a Delphi, the pivotal questions are "Who is it that should communicate about the problem, what alternative mechanisms are available for that communication, and what can we expect to obtain with these alternatives?" From the list of properties of the application that lead to the need for employing Delphi, developed by Linstone and Turoff (1975), all of the following support the choice of Delphi as the appropriate research paradigm for this study. First, the problem does not lend itself to precise analytical techniques but can benefit from subjective judgements on a collective basis. Second, the individuals needed to contribute to the examination of a broad or complex problem have no history of adequate communication and may represent diverse backgrounds with respect to experience or expertise. Third, more individuals are needed than can effectively interact in a face-to-face exchange. Fourth, time and cost make frequent group meetings infeasible.

The reason for the choice of a modified policy Delphi is based, then, on the need to deal with the potential diversity and divergence in opinion of the stakeholder groups, to facilitate communication in a non-confrontational or intimidating manner. As Dunn (1981) notes, the Delphi process avoids several sources of distorted communication found in groups:

1. domination of the group by one or several persons;
2. pressures to conform to peer group opinion;
3. personality conflicts and interpersonal hostility; and
4. the difficulty of publicly opposing persons in positions of authority.

These problems are avoided through the basic principles of the Conventional and policy Delphi techniques. The modified policy Delphi provides for what Linstone and Turoff (1975) label "structured communication" in that there is provided: some feedback of individual contributions of information and knowledge; some assessment of the group judgement or view; some opportunity for individuals to revise views; and some degree of anonymity for the individual responses. The technique adopted for this study is what Mitroff and Turoff (1975) label the Kantian Delphi or "contributory delphi," i.e., one which "allows many 'informed individuals' in different disciplines or specialties to contribute information or judgements to a problem area which is much broader in scope than the knowledge than any one of the individuals possesses" (p. 28).

In general, the Delphi technique has a variety of potential applications (Linstone & Turoff, 1975), the following having particular relevance to this study:

1. in putting together the structure of a model;
2. in developing causal relationships in complex economic or social phenomena; and/or
3. in exposing priorities of personal values and social goals.

In summation, from the variety of research methodologies available, the Delphi has been selected as most appropriate.

The Computerized Policy Delphi

Researchers have long known that the Delphi process could be expedited significantly by using computer technology to manage the data. There are, however, few reported studies in the field of education where this has been done. As signficantly, the Delphi process could be expedited by using telecommunications technology to gather the data. This, too, is a relatively untried idea. Therefore, the precise techniques for data gathering and analyzing used in this study are experimental in their combined form.

In fact, forms of computerized Delphi and telecommunications Delphi have become common in contemporary society. Electronic polling, for example, gathers public opinion via telephone. Similarly, Electronic Town Meetings combine television, telephone and computer-managed voting for a real-time study or exercise. Futurists such as Buckminster Fuller, Erich Fromm, Hazel Henderson and Amitai Etzioni have noted that it is only a matter of time until American democracy would be graced at the national level by a form of electronic democracy (Meridian International Institute, 1993).

This use of technology to gather and report public opinion coupled with computer-managed data analysis has been labelled "teledemocracy" by Toffler (1990) and others. The adaptation of technology to planning processes and to decision making is heralded by some as promoting genuine democracy (Drucker, 1989; et al.). It is suggested that "instantaneous electronic plebiscites" on political, social and economic issues facing a nation will restore genuine democracy by providing an opportunity for all to participate actively in the political process and by dispelling feelings of alienation and political impotence (Didsbury, 1982). Didsbury warns, on the other hand, of the dangers of such a notion, i.e., the calamitous results of popular fickleness on issues; mass ignorance, hysteria, and passion; and oversimplification of difficult, complicated issues. "Electronic plebiscites could create a field day for the politician with the catchy slogan and the easy, simple solution. It is chilling to think that one's freedom or survival might hang upon the electronic whim of his neighbor, a neighbor who might be a passionate ignoramus, a religious fanatic, or a well-meaning, completely uninformed person" (Didsbury, 1982, p. 313). The methodology of this study, i.e., a computerized policy Delphi is a form of electronic plebiscite and, as such, must heed the warnings. The challenge is to combine these warnings with the advantage of incorporating the views of a wide spectrum of informed individuals in the process of examining and speculating about education in and for the future.

Summary

In conclusion, the data gathering and analysis processes of this study are based on the principles and procedures described as a modified, computerized policy Delphi.

Chapter 6

RESEARCH DESIGN AND PROCEDURES

This chapter describes the research design and the procedures employed in the study. The section on research design includes the statement of the problem and sub-problems; research variables; respondent selection, characteristics and participation; use of technology; and timeframe. The section on instrument development, data collection procedures, and analysis procedures addresses each of the five rounds / two phases of the study sequentially.

Research Design

Statement of the Problem with Sub-problems

The problem to be addressed by this study is that, despite massive societal change, there is no articulated national plan or comprehensive forecast for the education system in Canada in the future and for the future. Various stakeholders argue for an improved and/or changed education system; others present suggestions and recommendations for reform and/or radical transformation. The purpose of this study, therefore, is to examine the desirability, feasibility, and probability of reforms and/or transformations to the Canadian education system in the immediate future. The specific research questions are as follows.

1. What reforms and/or transformations, to education in general and to the Canadian education system in particular, are suggested or recommended by:
    1.1 criticisms from consumer groups (eg. parents, business leaders, students)?
    1.2 reports and studies generated by producer groups (eg. provincial and federal governments, and teachers' organizations)?
    1.3 the literature on educational reform?
    1.4 the futurist literature?
    1.5 the informed participants in the study?
2. According to informed stakeholders and with regard to the reforms and/or transformations identified, what is the:
    2.1 desirability of occurrence?
    2.2 feasibility or practicality of occurrence?
    2.3 probability of occurrence?
3. Of the reforms and transformations deemed to be desirable, feasible and probable, what is the probable:
    3.1 period of occurrence?
    3.2 catalyst for initiation?
4. Of the reforms and transformations deemed to be desirable and feasible but not probable, what is the primary obstacle or reason for non-occurrence?
5. What is the potential future state of the education system in Canada?

These are the questions that guide the processes and outcomes of the study.

Research Variables

Based on the theory of organizational structures as systems, the research variables in this study were the elements which comprise the education system, i.e., the sub-elements within the system elements of input and resources, process and practices, and outputs and outcomes. Clearly, these are not necessarily discrete variables; however, for practical purposes, they are divided in the following manner.

1. The inputs or resources of the system:
    - 1.1 entering students (eg. readiness, numbers, needs)
    - 1.2 personnel (paid and volunteer instructional, administrative and support staff) (eg. preparation, quality, appropriateness)
    - 1.3 finances (eg. amounts, sources, fees)
    - 1.4 available and unused resources (community, national, international) (eg. accessibility, equitable access)
    - 1.5 physical facilities (classroom, office, recreation, library, parking space, transportation) (eg. adequacy, appropriateness)
    - 1.6 technological equipment for management (computers and office equipment) (eg. adequacy, utilization)
    - 1.7 technological equipment for instruction (computers, audiovisuals, library technology, telecommunications)
    - 1.8 student support services (counselling, health services, child care, financial support)
    - 1.9 staff support services (professional development, teaching assistance, peer support, professional support services)
    - 1.10 teaching resources (curriculum, materials, technology, library, field trips)

1.11 adminstrative structure (local, provincial, national)

1.12 stated goals and plans (for students individually and collectively, for local and national goals)

1.13 time (semesters, commencement and completion periods)

1.14 organizational culture (values and norms, interpersonal relationships and communications)

1.15 institutional organization (size, structure, decision-making)

2. The processes and practices in the system:

2.1 student assessment (pre- and post-instruction)

2.2 student recruitment and program marketing

2.3 instructional methods and strategies

2.4 formal program plans and intended outcomes

2.5 informal learning opportunities and resources

2.6 supplemental programs (sports, enrichment, remedial)

2.7 student learning management (individualization, streaming)

2.8 logistics (class size, class length, semester length)

2.9 student management (discipline, motivation, rewards, counselling, retention)

2.10 staff management (evaluation, incentives, recognition, career paths, retention)

2.11 administrative behavior (teacher supervision, community interaction, learner involvement, planning, responsiveness)

2.12 involvement with community (parents and business)

2.13 links to other programs and services

2.14 program evaluation, development and accountability

2.15 interaction with the external environment (leadership, future orientation, responsiveness to government and to societal stresses)

3. System outputs or outcomes (for):

    3.1 individual students (achievements, changes, attitudes, skills)

    3.2 students collectively (opportunities, responsibilities)

    3.3 local community

    3.4 Canadian society (short-term, long-term)

    3.5 employers

    3.6 teachers, support staff and volunteers

    3.7 administrators and institutions

    3.8 government departments, funders and policy makers

For purposes of this study, these are the elements of the Canadian education system that could and/or should change in the future and for the future. Changes with regard to these variables were solicited in Round 1, and judged for desirability, feasibility, and probability in Rounds 2 - 4.

Respondent Criteria and Participation

The process of this study is to generate a forecast of change in Canadian education from the point of view of informed individuals through a computerized policy Delphi. Operationally defined, the Delphi technique is an intuitive forecasting procedure for obtaining, exchanging and developing informed opinion about future events (Dunn, 1981). The procedure, simplistically, is to begin with a general question and, through subsequent rounds of questioning, provide a multifacetted and ordered answer. The data to be gathered, synthesized and analyzed, therefore, are personal opinions.

In this respect, a policy Delphi is a form of intuitive forecasting, defined by the World Future Society (1977) as any method of forecasting that relies on an individual's subjective judgement or personal feelings about what is likely to happen. The technique adopted for this study is what is labelled the Kantian Delphi or "contributory Delphi," i.e., one which "allows many 'informed individuals' in different disciplines or specialties to contribute information or judgements to a problem area which is much broader in scope than the knowledge that any one of the individuals possesses" (p. 28). Therefore, the respondents are individuals representative of leading thinking about educational reform as identified by the researcher.

Guiding the selection of the respondents is the notion of two major stakeholder groups, i.e., the producers and the consumers. The producers may be further broken down into direct and indirect providers, and the consumers into students and/or their guardians and "consumers" of completers, i.e., business and industry in Canada. As these are not discrete categories, there was only a minimal attempt to balance the numbers from each category.

Further to this, the study was completed in two phases with two separate but related panels of respondents. The second panel included both members of the first cohort and additional members who fit into the established categories identified above: direct and indirect producers and consumers.

The respondents in this study were individuals, informally representative of or members of a category of direct or indirect producer or consumer, selected by the researcher on the basis of the following criteria:

1. "informed status," i.e.,
    - 1.1 a publicly acknowledged degree of interest and awareness, for example quoted in the media or author of a study or book;
    - 1.2 a position of leadership responsibility in a directly-related organization such as a parent's group, teachers' organization, federal or provincial education agency, national business group, or national social policy institution;
    - 1.3 a pertinent formal role, such as an administrator, teacher, student, teacher educator, business person/employer, policy maker, futurist, media personality;
2. diversity with respect to
    - 2.1 Canadian geography,
    - 2.2 gender,
    - 2.3 Canada's official languages.

More explicitly, in the two phases combined, response was invited from, at the national level, individuals at the Canadian Teachers' Federation, the Department of Citizenship and Multiculturalism, the Council of Ministers of Education in Canada, the Prosperity Secretariat, the Canadian Home and School and Parent and Teacher Association, the National Anti-Poverty Organization, the Conference Board of Canada, the Canadian Federation of Independent Business, the Business Council on National Issues, the Canadian Chamber of Commerce, the Corporate-Higher Education Forum, the Social Planning Council of Canada, the Movement for Canadian Literacy, the Canadian Council on Learning Opportunities for Women, and the Canadian Labour Force Development Board. At the provincial level, response was invited from a provincial educators' association for quality education, a teachers' association, a human resource development project, four provincial education ministries, and a provincial education commission. At the local or individual level, among the invited respondents were chief administrators in two major urban school boards and one rural school jurisdiction, three private educational researchers, three college administrators, three university administrators, three teachers, three federal politicians, six teacher educators/academics, six business persons, four students, four television and newspaper personalities, three futurists, three adult education organizers, one leader in the arts community. A rigorous attempt was made to include individuals from every province and territory in Canada, from both official language groups, from a spectrum of adult age groups. Additionally, an attempt was made to balance gender participation.

From a much larger group of potential respondents, for each phase, 45 individuals were invited to participate.

- In Phase 1, of the 45 invitees, 19 commenced the study and 9 completed Round 4, the end of Phase 1.
- In Phase 2, to the 19 individuals who commenced Phase 1, 26 new individuals were added in an attempt to enhance participation and to further balance the categories.
- In Phase 2, of the 45 invitees, 27 started and 25 completed the survey which was Round 5 only.

With due regard for the preservation of anonymity, the 36 respondents who started either Phase 1 and/or Phase 2, in their primary roles, may be described as:

4 community college administrators (3 provinces)
1 administrator of an independent school
2 senior school board administrators (2 provinces)
1 senior university administrator
1 administrator of a provincial human resource project
4 university professors of education (3 provinces)
2 parent organization representatives (2 provinces)
2 administrators of social agencies (provincial)
1 administrator of a national social agency
1 adult high school student
1 university student
1 Canadian futurist
2 politicians (1 national, 1 provincial)
3 provincial educational administrators (3 provinces)
1 senior educational consultant
1 national newspaper reporter
1 representative of the Chamber of Commerce
2 college instructors
4 professional adult educators
1 professional artist/arts organizer

Taken together, these individuals were drawn from 8 provinces, both official language groups, all age levels from youth to seniors, with approximately one third female participation.

Respondent Participation

Optimal numbers of respondents were determined by both technological capacity and potential cost. The selection of respondents and communication with participants was the sole responsibility of the researcher.

Upon identification, potential respondents in Phase 1 were formally invited to participate by means of a package mailed by special letter (Appendix 6.1) to 45 individuals. The package contained a letter of introduction and invitation, an overview of the study and the process, the Round 1 question and response directions, a brief background reading paper, and a curriculum vitae of the researcher. Most importantly, the letter contained the individuals personal identification number (PIN) for accessing the telephone response system. In the letter, the ethical issues were outlined and it was made explicit that the invitees initiation of participation was considered to be agreement to those terms, particularly to the confidential nature of participation but the public disclosure of results.

The letter requested that those who wished to participate could commence immediately and complete Round 1 within a specified period of time; those who did not wish to participate could simply trash the package, although a phone call would be appreciated. A two-week opportunity was provided, and after one week, a follow-up phone call was made.

As a result of follow-up phone calls, of the 45 packages mailed, at least four were not received, two were directed to other individuals within the organization who subsequently did not choose to respond, and nine could not be accounted for as the invitees could not be reached by phone. Of the remaining 30, then, nine confirmed either in writing or by phone that they would not be participating, and six stated that they would try but would not commit. In total, 19 invitees of the 30 potential accepters responded in Round 1, effectively a response rate of 63%. In summation, in Phase 1, respondents signalled their willingness to participate and to comply with the process by dialling the toll-free number and entering their PINs. Phase 1 included four rounds of the Delphi process over a period of five weeks, and nine individuals concluded Round 4.

In Round 5 of the Delphi, in addition to the 19 individuals who initiated participation in Round 1, 35 new individuals were invited to participate. Each invitation was in the form of a telephone call, and 26 individuals confirmed that they would be participants. The questionnaire with explanatory overview was sent by telefax transmission to 36, mailed by special letter to three individuals, and hand-delivered to six. After three weeks of the four-week response period, 21 non-respondents were contacted by fax and 9 were personally contacted to remind them that the deadline was approaching. In total, 27 of the 45 invitees responded, effectively a response rate of 60%; however, given that only nine finished Round 4 and 26 were added to total a realistically expected 35 participants, the response rate under this circumstance was 77%.

The problems with soliciting, initiating and sustaining involvement are discussed elsewhere. At the conclusion of the data-gathering phase of the study, each of the 45 respondents was thanked, again by fax or in person.

Use of Technology

The data-collection process of the study was experimental in its use of telecommunications and computer technology. Hence, the design of the study, in terms of questionnaire format, timelines, and data management, was in part dictated by the opportunities and limitations presented by technology.

One technology utilized was facsimile transmission. This presented considerations about the format of the study, for example, the length due to the cost considerations of transmission charges and paper supplies of respondents, and size of print and spacing for easy transmission and subsequent reading. A more important consideration was the availability of fax machines and the question of anonymity. While the use of facsimile transmission clearly reduces the time necessary to send and receive information, if only one respondent does not have a facsimile machine, then the timeframe must account for the time to use the postal system. More importantly, most individuals do not have personal fax machines; their incoming transmissions may be monitored, misdirected, delayed or lost by someone else. It cannot be assumed, under any circumstances, that a facsimile transmission has been received. As well, as incoming transmissions must include the receiver's full name for delivery purposes, an automatic fax-out service cannot be employed as it eliminates the anonymity of the respondents. Each fax was sent individually by the researcher, although, as an alternative, a professional service should be able to guarantee a degree of client confidentiality. Despite these limitations, facsimile transmission was utilized to speed up data-gathering and enhance communication. When the postal service was used of necessity, special delivery was utilized at considerable extra cost. Electronic faxsimile transmission was the first innovation.

The second technology utilized was simply the telephone. In fact, this technology was chosen because of its simplicity and ubiquity. Using the telephone and a toll-free phone number, respondents registered their responses to the questions. This second innovation had the advantages of eliminating the sometimes-tedious use of pencil and paper questionnaires, avoiding the time involved in using the postal service, reducing the cost to the respondents to the value of their time, and increasing the interest or curiousity value of the study. Using the telephone, two types of data entry were incorporated: in Round 1 "voice capture" recorded the actual voiced responses to the research question; in Rounds 2 - 5, the rating choices coincided with numbers on the telephone dial or touch pad, and respondents keyed in their rating following a voice prompt including the question number and concept. The disadvantage of using this technology was that entering the data was time-limited and somewhat boring.

The third technology used was the computer to manage and sort the data, and to keep track of the respondents. During a round and following the completion of a round, the computer was able to provide information about exactly who the respondents had been based on the PINs entered and precisely how each concept in each question had been rated. The advantage of time-saved and data-management, while appreciable, was not innovative. The combination of computer management and telephone data entry, however, was innovative to such an extent that this study was a pilot for the telecommunications firm involved. Thus, the use of technology in the design of the study was of major significance.

Timeframe

The timelines for this study were determined, in large measure, by the technology used. Specifically this means that, as the costs of the telecommunications and computer system used were donated, every effort was made to keep costs to a minimum. In telecommunications, transmission time and computer time is money. Secondly, as summer was approaching and as summer is typically a downtime for people working in large organizations and in education, efforts were made to engage respondents and complete the study before individuals took summer hiatus. This, in fact, became a problem nearing completion of the study. Finally, the original timeframe was lengthened as it seemed one week was not enough time for all respondents to participate. Therefore, the study was conducted between April 16 and July 15, 1993. On July 16, the toll-free line was disconnected and the data instantly tabulated.

Research Procedures

The use of a policy Delphi is typically to inform the creation of social policy. According to Linstone and Turoff (1975), "policy Delphi is an aid to judgement and not a decision-making tool" (p. 202). In the case of this study, the policy Delphi may be thought of as indicative planning which is defined by the World Future Society (1977) as a national planning process which emphasizes agreed-on procedures to achieve given objectives rather than rigid decrees or directives. In this capacity, the policy Delphi seeks to determine desirability (effectiveness or benefits), feasibility (practicality), importance (priority or relevance), and confidence (in validity of argument or premise) of policy options (Linstone & Turoff, 1975, p. 90-91). Consensus may or may not result; it is advice and policy directions that are sought for judgement purposes, in this case, about education in and for the future of Canada.

According to Dunn (1981), a policy Delphi typically embodies several types of questions: forecasting items (probability of occurrence), issue items (rank issues in terms of importance), goal items (judgements about desirability of goals), and options items (alternative courses of action). These types of questions, based on the literature of educational reform and futurism, formed the questionaire.

A characteristic of the design of a Delphi study is that each questionnaire in the series is designed from the data received in the previous round. Therefore, the instrument development is imbedded in the procedures involved in data collection and analysis. The traditional Delphi process was further modified in that Rounds 2, 3 and 4 were essentially one very long round broken into three parts. In essence, the study was comprised of three rounds: the general question; the rating of the accumulated items for feasibility, probability and desirability; and the rating of a smaller number of desirable and feasible items for period of occurrence, change catalyst, and/or reason for non-occurrence. The first two rounds comprised Phase 1; the third round, with a different panel of respondents, comprised Phase 2.

Round 1 (Phase 1)

In Phase 1, a panel of respondents was selected and invited as per the criteria above. Of the 45 individuals invited, 19 participated in Round 1, nine in Round 2, ten in Round 3, and nine in Round 4. This presented a credibility problem which is discussed elsewhere. The decision was taken to enlarge the panel for the final round, hence the distinctions of Phase 1 and 2.

Instrument Development

The Round 1 questionaire was essentially one question: "What, in your opinion, should be changed about the education system in Canada?" In order to give some structure to the responses and to give respondents some idea of where to start, the elements of the system were presented as above, i.e., the sub-elements within the categories of system input and resources, system processes and practices, and system outputs and outcomes. In addition, respondents were free to add sub-elements and were not expected to comment on every sub-element unless they so chose. Thus, the instrument for Round 1, mailed in the invitational package (Appendix 6.1), was simply the single question with potential response categories and directions for input of responses.

Data Collection Procedures

In Round 1, respondents were directed to dial a toll-free telephone number and respond to the voice prompts. The first direction was to enter a personal identification number (PIN) which had been assigned in the invitational letter. Following proper entry into the system, respondents were directed to speak to any or all of the sub-elements within the system elements as listed in Delphi Round One: Instructions. A voice prompt stated a sub-element with corresponding number which was used for tabulation purposes later on. All of the responses were captured on audiotape. The computer-managed response system was operational for a period of two weeks, from April 26 to May 7, and during this time 19 of the 45 invitees entered responses.

Data Analysis Procedures

These data, recorded audio responses, were subjected to a form of content analysis. Traditional content analysis often requires the sorting, counting and scaling of concepts within text or data; in this case, the sorting was essentially done, counting and scaling were irrelevant. In addition, a vast number of potential changes to system elements and sub-elements had been compiled from the four other data sources: the literature on educational reform and on the future, the popular press, and agency reports. Therefore, the data were analyzed only for additional concepts to be added to the list already assembled. Within established timeframes, this qualitative data analysis took place in the week following the input period in order that the second round be ready for immediate distribution.

Rounds 2 - 4 (Phase 1)

Instrument Development

The instruments for Rounds 2, 3 and 4 were the same in format but different in content. The content of each round was one of the three elements; therefore, Round 2 was system inputs and resources (Appendix 6.2), Round 3 was system processes and practices (Appendix 6.3), and Round 4 was system outputs and outcomes (Appendix 6.4). The entire system was broken into these three sets because of the vast number of changes suggested or recommended in each and the concurrent necessity for brevity inherent in the data-gathering process. In fact, each of the three sets, in retrospect, was probably too long. The content of each round, therefore, was the accumulated list of potential changes to Canada's education system as drawn from Round 1 and the four diverse literature sources.

The process of each of the rounds was the same, i.e., the respondents were asked to judge each change for desirability, feasibility and probability. The rating scale, based on similar forecasts, was as follows.

D (desirability) 1: very desirable (very important)
2: desirable
3: not desirable
4: highly undesirable

F (feasibility) 1: very feasible (easily done)
2: feasible with some effort
3: not feasible at this time
4: probably impossible

P (probability) 1: very probable
2: maybe
3: not likely
4: probably never

The changes were numbered such that the first digit (1 - 3) designated the system element (input, process, output); the second digit(s) (1 - 16) designated the system sub-element; and the third digit (1 - 9) designated the various specific changes relevant to the sub-element. These numbers were never keyed in by respondents, partly because they were part of the voice prompt system and partly because the digit "9" was used to terminate the telephone connection.

Data Collection Procedures

The faxed/mailed Rounds 2 - 4 questionnaires were designed so that individuals could note their rating along with each question (as per Appendix 6.2 - 6.4). Further, it was recommended that respondents prepare their responses as entry time was limited to approximately 15 minutes. Thus, following the PIN entry, a voice prompt stated first the number of the item and then each concept with a pause for keyed number response, eg., 121: desirability ?, feasibility ?, probability ?. Thus, for each numbered change and for each respondent, there were three ratings entered.

Data Analysis Procedures

The data to be analyzed were the ratings of desirability, feasibility and probability for each change. There were different total number of changes for each system element; i.e., Round 2 (system inputs and resources) was comprised of 95 items, Round 3 (system processes and practices) was comprised of 91 items, and Round 4 (system outputs and outcomes) was comprised of 47 items. Each of the 233 items was rated, on a 4-point scale, for desirability, feasibility and probability; therefore, there were 12 potential ratings for each item making a total of 2796 databits. This was tabulated instantaneously by computer and a print-out charted the responses as per the following example.

Item #	**Desirability**				**Feasibility**				**Probability**			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
211	5	2	2	1	0	4	6	0	1	1	6	2
212	2	5	3	0	0	7	2	1	1	3	5	1
213	4	2	4	0	3	5	2	0	3	1	5	1

These, then, were the data to be analyzed. Analysis consisted simply of combining two adjoining categories in such a way that the majority of responses for any item were either positive (1 and 2) or negative (3 and 4). Thus, the rating scale translated as "high" being a positive majority of responses and "low" being a negative majority.

The result of the data analysis process was to either forward items to the final round or eliminate them on the following basis.

1. Items to eliminate:

    1.1 low D, irrelevant F, low P
    (undesirable changes that probably won't happen)
    - 18 items

    1.2 high D, low F, low P
    (desirable but difficult changes that probably won't happen)
    - 19 items

2. Items to include in Round 5 (for occurrence and catalyst):

    2.1 high D, high F, high P
    (desirable and feasible changes that probably will happen)
    - 111 items

    2.2 low D, irrelevant F, but high P
    (undesirable changes that probably will happen)
    - 11 items

3. Items to include in Round 5 (for non-occurrence):

    3.1 high D, high F, but low P
    (good, feasible ideas that probably won't happen)
    - 72 items

    3.2 high D, low F, high P
    (good and probable changes that will be difficult to bring about)
    - 1 item

As a result of this analysis and sorting process, then, 37 items were eliminated from further inclusion in the study; 122 items were deemed to be probable, either highly positive or simply inevitable; and 73 items were judged to be good and feasible items with little probability of happening. These data formed the basis of the final round of the study.

Round 5 (Phase 2)

In Phase 2, a different panel of respondents were involved as per the criteria for selection and participation discussed above. Of the 45 individuals invited to respond, 27 completed this phase of the study.

Instrument Development

In keeping with the Delphi process, the final round of the study resulted from an analysis of the previous rounds. Round 5 questionnaire (Appendix 6.5) contained two types of questions. In the previous rounds, 122 changes had been judged by the Phase 1 panel to be probable, either because they were positive and feasible or because they were somehow inevitable although undesirable. The questions directed at these Phase 2.1 changes related to period of occurrence and to the probable catalyst that would initiate the change. As well, in the previous rounds, 73 changes had been judged to be good and feasible but somehow unlikely to happen. The question directed at these Phase 2.2 changes, then, related to a possible reason for non-occurrence.

Clearly, realizing the time limitations of the technology employed and taking into account the intimidation factor of 195 items, the length of the questionnaire had to be reduced. At this point, the recognition of redundancies between concepts within sub-elements came into play; for expediency, redundancies had to be eliminated. More importantly, items were regrouped, not by system element, but into common themes or areas. Thus, the Round 5 questionnaire contained 53 Phase 2.1 questions grouped under nine headings and 40 Phase 2.2 questions for a total of 93 items. They were numbered differently, with the first digit signifying the part of the round (1 - 2), and the second two digits simply chronological numbering.

The Phase 2.1 items, again, were changes judged to be probable but not necessarily positive. Therefore, with the introduction of new panel members, it became relevant to allow these newcomers to eliminate some items. Hence, the respondents forecast these probable changes as follows.

Period of occurrence of the change:	1. before year 2000 2. after year 2000 3. probably never

As well, these changes were clearly concepts that are not yet adopted or at least, widely adopted; hence, they were events or actions yet to happen. As in most change, some incident or individual typically becomes the catalyst for any given change and it seemed that the next obvious question would relate to that catalyst function. The respondents were therefore asked to predict, for each item, the necessary catalyst that would or could initiate the change from the following items:

1. organized / increased pressure from students and parents
2. direct involvement of employers and businesses
3. significant societal disruption, eg., environmental, economic, political, or natural disaster
4. changed provincial government priorities and programs
5. community partnerships bringing new / more resources
6. federal government intervention and national planning

7. pressure from teachers and administrators
8. other / none of the above

This list was restricted to eight items because, as indicated earlier, the digit "9" was a disconnect function. As well, the system is designed to move on after one digit entry.

The Phase 2.2 items were changes judged to be desirable and feasible but improbable. The obvious question seems to be why such positive changes were so unlikely. Although the obvious answer might be just lack of resources, respondents were asked to surmise the primary obstacle or reason for non-occurrence from the following possibilities:

1. economic (financial considerations)
2. social (disruptive consequences)
3. technical (too difficult)
4. political (power struggles)
5. other
6. no obstacle (this change is desirable, feasible, probable)

Again, the new respondents were given the opportunity to essentially move any item to the other category of being probable (choice #6). The Round 5 questionnaire was designed so that respondents would note their choices as they proceeded through reading it and be prepared to key in choices in the 15 minutes allocated.

Data Collection Procedures

As in the previous rounds, respondents called the toll-free telephone number and entered the study by keying in a PIN. Voice prompt led the respondents through the numbered questions and individuals keyed in their ratings for each item, two for Phase 2.1 and one for Phase 2.2. The ratings were based on personal opinion.

Data Analysis Procedures

The data to be analyzed in this round were the choice of items that had been rated by the respondents regarding the period of occurrence (1 - 3) and necessary catalyst for change (1 - 8) for the first 53 items, and the primary obstacle or reason for non-occurrence of the last 40 items. As with Rounds 2 - 4, the data were computer managed and sorted; thus the data were presented as per the following examples.

Item #	**Occurrence**			**Catalyst**							
	1	**2**	**3**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
101	13	13	1	2	3	6	7	5	3	0	1
102	15	11	1	14	5	4	3	0	0	0	1
103	5	20	2	3	0	4	5	9	4	0	2

Item #	**Obstacle (reason for non-occurrence)**					
	1	**2**	**3**	**4**	**5**	**6**
201	7	1	0	12	1	4
202	0	6	1	9	3	6
203	1	2	2	16	1	3

The analysis of these data consisted of determining, again by majority vote, which category of occurrence, catalyst and obstacle had the highest incidence. An analysis of these data comprised the outcome of the study.

Summary

This chapter outlines the research design for the study and the procedures employed in instrument development, data collection and data analysis.

The first section on research design contains the statement of the problem and sub-problems; a listing of research variables; the process of respondent selection, characteristics and participation; the innovative use of technology; and timeframe.

The second section on instrument development, data collection procedures, and analysis of procedures addresses each of the five rounds/two phases of the study in order.

Chapter 7

DESCRIPTION AND ANALYSIS OF DATA

As the methodology of this study was a modified policy Delphi, each round generated data to be described and analyzed separately. Therefore, this chapter consists of the description of the data from Round 1 to Round 5, and the analysis particularly as it formed the basis of each subsequent round.

Round 1 (Phase 1)

The purpose of Round 1 was two-fold. It served primarily to elicit suggestions and recommendations for change in Canada's education system, from the experiences and opinions of the respondents, to be added to the list compiled through the literature review. To this end, it comprised the final portion of the first research question which was the following.

1. What reforms and/or transformations, to education in general and to the Canadian education system in particular, are suggested or recommended by:
    - 1.1 criticisms from consumer groups (eg. parents, business leaders, students)?
    - 1.2 reports and studies generated by producer groups (eg. provincial and federal governments, and teachers' organizations)?
    - 1.3 the literature on educational reform?
    - 1.4 the literature of futurists?
    - 1.5 the informed participants in the study?

The secondary purpose was to engage the respondents in the study processes in a non-threatening manner and to introduce the technology that was being used. A discussion of this secondary purpose is found in the final chapter; this chapter provides a discussion of the data gathered.

Description and Analysis of the Data

In this round, respondents were asked to read or speak their ideas for change into the telephone. In order to assist in organizing their thoughts, respondents were given an outline of topics, i.e., the elements and sub-elements of the education system. These were numbered, and as the voice prompt stated each number, respondents had 90 seconds to make a statement. All statements were recorded and subjected to content analysis. The researcher was analyzing only for new ideas to add to the list generated. The additions supplied by participants in Round 1 were the following.

1. Regarding resources or inputs:
    - current rather than outdated machines and processes would be available
    - funds for public education would be reduced
    - vocational programs will disappear due to cost and declining enrollments
2. Regarding outputs/outcomes:
    - college and university entrants have adequate literacy skills

3. Regarding the external environment and structures:

   - there is public awareness of the critical link between education and a successful society

   - there is a common understanding of the intended product of the education system in Canada

Many of the items that were identified in the literature review were reiterated; however, interestingly, the opposite view of a change might be taken. The subsequently enlarged list became the basis of the questionnaires for Rounds 2, 3 and 4.

Rounds 2 - 4 (Phase 1)

The number of potential changes to Canada's education system was far too large to comprise a single questionnaire; therefore, what would essentially have been one Delphi round of item judging and sorting was broken into three parts. Each system element was dealt with separately: Round 2 was concerned with changes to the system element of resources and inputs, Round 3 with changes to the element of processes and practices, and Round 4 with the element of outputs and outcomes. The process for each was exactly the same: a questionnaire was faxed or mailed, the participants entered their responses using the toll-free telephone line within a specified timeframe, and the responses were computer tabulated.

The purpose of this process was to address the following research question.

> According to informed stakeholders and with regard to the reforms and/or transformations identified, what is the:
>
> - desirability of occurrence?
> - feasibility or practicality of occurrence?
> - probability of occurrence?

Therefore, in each round, each respondent rated each item for desirability, feasibility and probability according to the following scales.

D (desirability)	1:	very desirable (very important)
	2:	desirable
	3:	not desirable
	4:	highly undesirable
F (feasibility)	1:	very feasible (easily done)
	2:	feasible with some effort
	3:	not feasible at this time
	4:	probably impossible
P (probability)	1:	very probable
	2:	maybe
	3:	not likely
	4:	probably never

Thus, for each item, there were 12 possible databits. The data were analyzed simply by combining two adjoining categories in such a way that the majority of responses for any item were either positive (1 and 2) or negative (3 and 4). The rating scale translated as "high" being a positive majority of responses and "low" being a negative majority.

Round 2 Data

In Round 2, the 95 potential changes to the inputs and resources element of Canada's education system were each judged by each respondent for desirability, feasibility and probability on a rating scale of one to four with one being very high and four being very low. Thus the data were the accumulated ratings of the desirability, feasibility and probability for each item (Appendix 7.1). The result of the data analysis process was to either forward items to the final round or to eliminate them; this is discussed at the end of Round 4.

Round 3 Data

In Round 3, the 91 potential changes to the processes and practices element of Canada's education system were each judged by each respondent for desirability, feasibility and probability on a rating scale of one to four with one being very high and four being very low. Thus the data were the accumulated ratings of the desirability, feasibility and probability for each item (Appendix 7.2). Again, the result of this data analysis process was to either forward items to the final round or to eliminate them; this is discussed at the end of Round 4.

Round 4 Data

In Round 4, the 47 potential changes to the outputs and outcomes element of Canada's education system were each judged by each respondent for desirability, feasibility and probability on a rating scale of one to four with one being very high and four being very low. Thus the data were the accumulated ratings of the desirability, feasibility and probability for each item (Appendix 7.3). As with Round 2 and Round 3, the result of this data analysis process for Round 4 was to either forward items to the final round or to eliminate them.

Data Analysis: Rounds 2 - 4

As stated earlier, the data were analyzed simply by combining two adjoining categories in such a way the majority of responses for any item were either positive (1 and 2) or negative (3 and 4). Thus, the rating scale translated as "high" being a positive majority of responses and "low" being a negative majority. The result of the data analysis process was to either forward items to the final round or eliminate them on the following basis.

1. Items to eliminate:
    - 1.1 undesirable changes that probably won't happen
    - 1.2 desirable but difficult changes that probably won't happen
2. Items to include, for occurrence and catalyst:
    - 2.1 desirable and feasible changes that probably will happen
    - 2.2 undesirable changes that probably will happen
3. Items to include, for non-occurrence:
    - 3.1 good, feasible ideas that probably won't happen
    - 3.2 good and probable changes that will be difficult to bring about

The result of this process was that 37 items were eliminated; 122 items were retained as being desirable, feasible and probable; and 73 items were retained as being desirable and feasible but not probable. These categories correspond with the following two problems that partially formed the basis of the study:

> Of the reforms and transformations deemed to be desirable, feasible and probable, what is the probable:
>
> - period of occurrence?
> - catalyst for initiation?
>
> Of the reforms and transformations deemed to be desirable and feasible but not probable, what is the primary obstacle or reason for non-occurrence?

The outcome of this process, i.e., the two types of question for further investigation, formed the final round questionnaire.

Eliminated Items

From Rounds 2-4, 18 items, listed by system element (Appendix 7.4), were eliminated because they were judged by the respondents to have low desirability and low probability, thereby making the feasibility irrelevant. The changes that were eliminated would have essentially resulted in a radically transformed education system. The role of teachers would either have changed to become resource persons in a totally individualized learning system or resource persons to parents conducting home schooling.

Teachers unions would have been eliminated, and schools would attract teachers by offering competitive salaries and working conditions. A second set of changes would have eliminated teachers, replacing them with computerized instruction and virtual reality technology. Other changes were those that participants would want to prevent, such as the deterioration of physical facilities and the total replacement of the traditional library with a technologized version. Participants judged that government should not interfere by imposing a standardized curriculum across all provinces, by establishing a federal government agency to coordinate the education and training of all citizens, and particularly by not privatizing education completely. In short, the respondents did not wish to alter a number of traditional components: by having parents and students become directly involved in administation; by eliminating classes or time as management structures; by adding dress codes and strict behavior standards; or by allowing business to drive the school curriculum and assessment practices. In summation, the changes judged to be either the most radical (low probability) or undersirable were eliminated in this round.

In addition, 19 items were eliminated (Appendix 7.5) because, while they were judged to be highly desirable, there were low on both feasibility and probability: good ideas that were seemingly too difficult to implement or expect. For example, respondents would like to see physical facilities that cater to all ages; current, rather than outdated, machines and technologies; smaller class sizes; specialist schools; modularized and open-entrance/open-exit programs for all; extensive pre-screening of students for ability, learning style and prior learning; the primary focus of the school to be intellectual development; tracing of individual learning through a lifelong learning records; availability of opportunity and mobility through a national learning credit bank; more teacher and community involvment in administration and vice versa; and priority status, resources and political attention given to education. These changes were possibly eliminated because they entailed additional financial resources or increased levels of cooperation and collaboration.

In total, these were the 37 items eliminated in Rounds 2 - 4. Further research might shed some light on the reasons why respondents did not feel these changes would not come about.

Retained Items (Part 1)

Two categories of items were retained for part one of the final round. The first are items that were judged to be high in desirability, feasibility and probability: good ideas that could be expected to happen. The second type of items were high in probability but low in desirability, making feasibility irrelevant: undesirable changes that seemed to be inevitable for some reason. A total of 111 items were retained as they were judged by the respondents to be desirable, feasible and probable (Appendix 7.6). The list of potential changes to system input, processes and outcomes is extensive and, in some cases, contradictory. It is not comprehensive, that is to say, it does not purport to contain every conceivable change; only those suggested by the literature review and Round 1 responses.

A second category of items, those judged to be high in probability but low in desirability, were also retained. Respondents seemingly believed that these changes, while undesirable, where somehow inevitable, thereby making feasibility irrelevant. These changes included, for example, reduced public funding and the elimination of all but core academic services; user-fees charged for all extra-curricular activities; direct financial contributions by business and industry; insufficient numbers of computers in schools for them to be used as teaching tools; a very traditionally academic curriculum; a rigid structure and prescribed curriculum to ensure that standards are met by all students at various stages; national goals related to those of other countries for international comparison purposes; a longer school year; each school defining and pursuing its own mission; parents and students being regarded as consumers for whom schools compete. In total, eleven items were retained as they were judged by the respondents to be probable while not desirable: changes that shouldn't happen but probably will (Appendix 7.7).

Together, these 122 items comprise those changes which the Phase 1 respondents judged to be probable, and these items formed the basis of part one of the final round.

Retained Items (Part 2)

Two categories of items were retained for part two of the final round. The first of these were items that were judged to be improbable; however, they were deemed to be desirable and feasible, leading to the obvious question of why they could not be expected to occur. The second group of items were judged to be of high desirability and probability but low feasibility; again, this leads one to question what the obstacle is to feasibility. This is in fact the question that is asked of these two types of changes in the final round.

In all, 73 items were judged to have high desirability, high feasibility but low probability: good, feasible ideas that probably won't happen (Appendix 7.8). Taken together, these 73 items formed the basis for the second part of the final round.

Round 5 (Phase 2)

Round 5 essentially became a second phase because a different panel of respondents was involved; to those who initiated Round 1, a number of new respondents were added by invitation. In keeping with the Delphi process, Round 5 was a product of the preceding rounds. Technically, the Round 5 questionnaire could have comprised 195 items: the 122 judged to be desirable, feasible and probable, and the 73 items judged to be desirable and feasible but not probable.

As stated in the previous chapter, the decision was taken to reduce this number to something more managable. At this point, the recognition of redundancies between concepts within sub-elements came into play; for expediency, redundancies had to be eliminated. More importantly, items were regrouped, not by system element, but into common themes or areas. Thus, the Round 5 questionnaire contained 53 Phase 2.1 questions grouped under nine headings and 40 Phase 2.2 questions for a total of 93 items.

Data Description

Different questions were asked regarding the items in Phase 2.1 and Phase 2.2. Regarding the former, which were changes deemed to be desirable, feasible and probable, respondents were asked to estimate the period of occurrence and the necessary catalyst for change. In addition, regarding the Phase 2.2 items, which were judged to be desirable and feasible but not probable, respondents were asked to speculate on the possible reasons for non-occurrence. Taken together, the ratings for both types of items comprised the final round data (Appendix 7.9). The analysis of these data consisted, primarily, of determining, again by majority vote, which category of occurrence, catalyst and obstacle had the highest incidence.

Data Analysis

The analysis of data was primarily for the purpose of creating a forecast of changes in Canada's education system, i.e., the period of time during which certain changes could be expected to occur. In addition, there is speculation as to what the necessary catalyst might be to bring about that change. Finally, there is speculation as to why certain desirable and feasible changes do not seem to be probable at any time in the future.

Changes Forecast to Take Place

The changes anticipated or forecast to take place were divided into 5 timeframes or categories:

1. before the year 2000
2. after the year 2000
3. around the year 2000
4. after the year 2000 or not at all
5. indeterminate occurrence.

The changes, in these categories, are listed together with the top three catalysts for change for each in terms of percentage of responses in Appendix 7.10.

Changes that Probably Won't Happen

In the Phase 1 judging of potential changes for feasibility, desirability and probability, some items were judged highly feasible and desirable, but not probable. In Phase 2, respondents were asked to speculate on why these seemingly positive changes were doomed; however, as the Phase 2 panel of respondents included some different individuals, respondents were given the option to change the status to probable as well. The result of that speculation process is in Appendix 7.11.

This concludes the data analysis process for the final round of the study. The conclusion, the forecast of change in Canada's education system in the immediate future, follows a summary of the research process.

Process Summary

The following is a simple summary of the process of changed rounds, respondents, eliminated and retained items in the study.

PHASE 1 (first set of respondents)

Literature review and Round 1 combined:

243 items divided into the next three rounds

Round 2: 91 items (input and resource)
Round 3: 95 items (process and practice)
Round 4: 47 items (output and outcome)

Items in Rounds 2-4 were judged in terms of desirability, probability and feasibility.

Rounds 2-4: 37 items eliminated

19 desirable, but improbable and infeasible
18 undesirable and improbable

For Round 5

122 items retained (desirable, feasible and probable)
73 items retained (desirable, feasible, not probable)
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195 items (to be regrouped)

PHASE 2 (second set of respondents)

Round 5 (195 items from Rounds 2-4 regrouped)

Phase 2.1: 53 items (desirable, feasible probable)

and

Phase 2.2: 40 items (desirable, feasible but improbable)

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93 items

Round 5 (Phase 2.1) items rated according to what might bring about the change and when that change could be anticipated.

Round 5 (Phase 2.2) items rated according to what might prevent the change.

An analysis of Round 5 results in the forecast of changes, i.e., the outcome of the study.

The Forecast

The purpose of this study was to forecast change in Canada's education system. Through the process of a computer-managed modified policy Delphi, a panel of informed respondents sorted through suggestions and recommendations for change to the publicly-funded education system in Canada. Some suggestions were eliminated as undesirable and improbable; those that remained, having been judged to be desirable, feasible and probable, became the forecast of change in the periods before and after year 2000.

Before the Year 2000

The following are nine changes that the respondents forecast would be implemented before the year 2000, with the predominant catalysts for change for each.

Changes to System Inputs and Resources

By the year 2000, there will have been at least four significant changes in terms of resources and inputs in Canada's education system.

First, it is forecast that the school will have extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts, and student mentors drawn from the community. This will have been brought about largely through community partnerships bringing new / more resources, direct involvement of employers and businesses, and changed provincial government priorities and programs.

Second, the curriculum will have incorporated global studies, international education and environmental education as a result of changed provincial government priorities and programs, significant societal disruption, and direct involvement of employers and businesses.

Third, the strengthening of math and science curriculum will have been brought about by changed provincial government priorities and programs, direct involvement of employers and businesses, and federal government intervention and national planning.

Fourth, there will be larger numbers of individuals wanting formal education and different types of students as a result of increased emphasis being placed on the need to remain current in one's field, and to develop new and different skills. This will be brought about by changed provincial government priorities and programs, pressure from teachers and administrators, and direct involvement of employers and businesses.

Changes to System Processes and Practices

By the year 2000, it is forecast that there will be at least four major changes to the process / practice element of the education system.

First, extensive language readiness programs will have been instituted, necessitated by increasing numbers of students of all ages who do not speak either of Canada's official languages. This will have been brought about largely through federal government intervention and national planning, changed provincial government priorities and programs, and community partnerships bringing new / more resources, all of these logically related in some way to immigration policies and practices.

Second, schools and universities will "earn" extra income by attracting more students and/or providing new services. This change will be brought about by a combination of changed provincial government priorities and programs; direct involvement of employers and businesses; significant societal disruption, eg., environmental, economic, political, or natural disaster; and community partnerships bringing new / more resources.

Third, much administrative work will be done by non-educators. This will be the result of changed provincial government priorities and programs, pressure from teachers and administrators, and direct involvement of employers and businesses.

Fourth, direct skills instruction will dominate as a means of teaching. This will have been brought about by direct involvement of employers and businesses, organized / increased pressure from students and parents, and other catalysts. However, while direct skills instruction may dominate, it will be balanced by approaches to active learning, eg., group work and simulation, the result of opposing pressure from teachers and administrators, organized / increased pressure from students and parents, and other forces.

Changes to System Outcomes and Outputs

In terms of system outcomes, there will be at least one change. The completion rate will have been significantly increased through the implementation of special programs developed in consultation with those students at risk of dropping out. This will have been brought about largely as a result of changed provincial government priorities and programs, organized / increased pressure from students and parents, and pressure from teachers and administrators.

After the Year 2000

In addition to the changes listed above that may be achieved before the year 2000, the following 19 reforms to Canada's education system are anticipated.

Changes to System Inputs and Resources

At least three significant changes to the inputs and resources of the Canadian education system have been forecast by the panel of respondents.

First, disparities in financial resources between jurisdictions and provinces will have been resolved through an equalization system. This will have been the result of federal government intervention and national planning, changed provincial government priorities and programs, significant societal disruption, and other factors.

Second, in terms of physical facilities, uniform-sized, sterile classrooms will have been replaced by facilities which will enable large and small group instruction as well as independent study. Catalysts for this change will have been pressure from teachers and administrators, changed provincial government priorities and programs, and organized / increased pressure from students and parents.

Third, significant changes in teacher preparation will have resulted in teachers with advanced knowledge about learning and effective teaching. This will have been a result of changed provincial government priorities and programs, organized / increased pressure from students and parents, and pressure from teachers and administrators.

Changes to System Processes and Practices

In terms of changes to the processes and practices of the education system, a variety of changes have been forecast to occur after the year 2000.

First, in terms of staff management, increased status and rewards will have been allotted to the teaching profession. This will have been the result of pressure from teachers and administrators, changed provincial government priorities and programs, and other indeterminate factors.

Related to this, secondly, a team approach to work will have lessened stress on teachers. Catalysts for this change will have been pressure from teachers and administrators, and community partnerships bringing new / more resources.

Third, in terms of student recruitment and program access, all Canadians will have access to quality basic education programs in their home communities. The catalyst for this change will have been changed provincial government priorities and programs, federal government intervention and national planning, organized / increased pressure from students and parents, and other factors, presumably innovative means by which to make access universal to Canadians of all ages.

Fourth, secondary schools and universities will specialize in programs, eg., science and technology, arts, international baccalaureate, modern languages, international business. This will be because of changed provincial government priorities and programs, direct involvement of employers and businesses, and other factors.

Fifth, schools and post-secondary institutions will act as brokers for support services in the community, coordinating not duplicating services to meet the needs of students and seeking to prevent problems rather than trying to remediate them. Communities will develop plans and solve problems in conjuntion with the education system with its capacity to conduct research and provide human resources, professional and student. The catalysts for this change will be changed provincial government priorities and programs, community partnerships bringing new / more resources, and other factors.

Sixth, all educational institutions will support and demonstrate educational entrepreneurialism, eg., innovative and responsive programs such as "women in science awareness program". This will have resulted from changed provincial government priorities and programs, organized / increased pressure from students and parents, direct involvement of employers and businesses, and other factors.

Seventh, schools will be open year-round, with three or four ongoing semesters, and the academic day, year, facilities and schedule will all be flexible. This will have been the result of changed provincial government priorities and programs, organized / increased pressure from students and parents, significant societal disruption, federal government intervention and national planning, and pressure from teachers and administrators.

Eighth, evaluation of each student will incorporate portfolio assessment of his/her work and student assessment will include results beyond those which can be measured with paper and pen. The catalysts for this change will have been changed provincial government priorities and programs, pressure from teachers and administrators, and other factors.

Ninth, theoretical and abstract knowledge will be heavily complemented by experiment and experience, both in and out of the classroom, and experiential learning outside the formal education system will be valued and validated. This change will have resulted from changed provincial government priorities and programs, pressure from teachers and administrators, organized / increased pressure from students and parents, community partnerships bringing new / more resources, and other factors.

Changes to System Outcomes and Outputs

With regard to changes in system outcomes and outputs, at least six major changes are predicted sometime after the year 2000.

First, the panel of respondents in this study forecast that a lifelong learning culture will have been adopted and systematized. Instead of determining age-specific outcomes, Canadian education, beyond the basics for children, will have become self-directed, i.e., learning will have become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity. This will have been the result of community partnerships bringing new / more resources, changed provincial government priorities and programs, significant societal disruption, and federal government intervention and national planning.

Second, excellence, effectiveness and efficiency will have been defined for all levels of the system, and accountability will focus on results rather than on compliance with rules and regulations. The catalyst for this change will have been federal government intervention and national planning, direct involvement of employers and businesses, and changed provincial government priorities and programs.

Third, an industry of knowledge creation and marketing will have developed in the post-secondary education sector which will contribute substantially to Canada's economic success. The impetus for this change will have been direct involvement of employers and businesses, significant societal disruption, and changed provincial government priorities and programs.

Fourth, students will have developed an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities. Catalysts for this change in student outcomes will have been unforeseen factors combined with changed provincial government priorities and programs, and pressure from teachers and administrators.

Fifth, students, through the formal education system, will become adept at functioning fully in society, acquiring practical work, life and citizenship skills. This will have resulted from changed provincial government priorities and programs, organized / increased pressure from students and parents, direct involvement of employers and businesses, community partnerships bringing new / more resources, pressure from teachers and administrators, and other factors.

Sixth, employers will find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills. This will have been the result of direct involvement of employers and businesses, and changed provincial government priorities and programs. The following are changes that the respondents forecast, in approximately equal numbers, would be implemented before the year 2000 and after the year 2000. Therefore, these changes to Canada's education system are forecast to occur somewhere around the year 2000.

Around the Year 2000

Finally, some changes were difficult to forecast in terms of implementation time. The following are changes that the respondents forecast, in approximately equal numbers, would be implemented before the year 2000 and after the year 2000. Therefore, these changes are forecast to occur somewhere around the year 2000.

Changes to System Inputs and Resources

A number of changes to the inputs and resources of the Canadian education system have been forecast for this timeframe.

First, education will have been been redefined as more than an academic endeavor that takes place in schools, and extensive coordination will exist between the variety of teaching/learning agencies in society. In addition, existing community facilities are used as part of the school, eg., libraries, recreation facilities, science laboratories, computer facilities. Catalysts for this change will have been changed provincial government priorities and programs, significant societal disruption, and community partnerships bringing new / more resources.

Second, national educational goals, objectives and standards will have been established as a result of federal government intervention and national planning, changed provincial government priorities and programs, and significant societal disruption.

Third, a growing number of poor children at risk of educational problems will have required extensive development of early intervention programs to identify and support these children. Catalysts for this change will have been altered provincial government priorities and programs, significant societal disruption, federal government intervention and national planning, and pressure from teachers and administrators.

Related to this, fourthly, more direct support will be available to single mothers to upgrade basic skills, and to unemployed and underemployed individuals to enter the education system. This will have been the result of changed provincial government priorities and programs, community partnerships bringing new / more resources, and federal government intervention and national planning.

Fifth, there will be more and different vocational training, with improved access to vocational and technical education and increased marketing to enhance its value. Catalysts for this will have been direct involvement of employers and businesses, changed provincial government priorities and programs, organized / increased pressure from students and parents, and community partnerships bringing new / more resources.

Sixth, and related to the above, new critical skills that have emerged will have been integrated into the curriculum of the pre-employment institutions as a result of direct involvement of employers and businesses, and changed provincial government priorities and programs.

Seventh, extensive career guidance programs, for parents and students, will be geared to future employment needs and opportunities as a result of direct involvement of employers and businesses, organized / increased pressure from students and parents, and changed provincial government priorities and programs.

Eighth, in their preparation, teachers will have experienced more practical work earlier, and will have been evaluated at an early stage for attitude and suitability. This will have been the result of changed provincial government priorities and programs, pressure from teachers and administrators, and organized / increased pressure from students and parents.

Ninth, and related to the above, teachers will have acquired advanced technological skills during teacher training and have opportunities to maintain enhanced skills.

Tenth, more seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers.

Changes to System Processes and Practices

Changes to the processes and practices of the Canadian education system have also been forecast.

First, through learning contracts, opportunities will have been made possible for extended work / study in the community, and all students will have access to co-operative education programs. This will have resulted from direct involvement of employers and businesses, community partnerships bringing new / more resources, changed provincial government priorities and programs, pressure from teachers and administrators, and other factors.

Second, students and/or their guardians will have access to a great deal of information about educational options, eg., program success rates, learning approaches, unique features. The government will measure and publicize many different kinds of results, eg., test scores, student satisfaction surveys, dropout rates, that the consumer uses to make choices in schools. The catalysts for this will have been organized / increased pressure from students and parents, pressure from teachers and administrators, and other factors.

Third, secondary students will be treated like adult students rather than elementary students in terms of responsibility and choices. This has resulted from organized / increased pressure from students and parents, direct involvement of employers and businesses, pressure from teachers and administrators, and other factors.

Fourth, the evaluation system will have changed from a focus on what learners can't do to what they can do, i.e., from a deficit model to an achievement/mastery model. As well, student achievement is not compared with others but is based on individual progress and individual potential. The catalysts for this change will have been pressure from teachers and administrators, changed provincial government priorities and programs, and other factors.

Fifth, the knowledge and skills to be acquired for all levels of education and training will have been defined in a competency-based manner. Student progress at all levels will be reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached. This has been the result of direct involvement of employers and businesses, changed provincial government priorities and programs, organized / increased pressure from students and parents, pressure from teachers and administrators, federal government intervention and national planning, and other factors.

Sixth, instruction will have become learner-centered and teacher-managed rather than teacher-centered as a result of pressure from teachers and administrators, organized / increased pressure from students and parents, and factors.

Seventh, the rigid structure and prescribed curriculum will have been replaced with a relatively flexible structure, for example, non-traditional courses blending such traditional courses as math and science, or English and history. Catalysts for this change will have been pressure from teachers and administrators, organized / increased pressure from students and parents, changed provincial government priorities and programs, and other factors.

Eighth, administration will include monitoring a proper system for assessing innovations under controlled conditions by independent evaluators. This is a result of pressure from teachers and administrators, and organized / increased pressure from students and parents.

Changes to System Outcomes and Outputs

A variety of changes are forecast to the outcomes and outputs of Canada's education system.

First, education will have become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity. Students have become consumers, examining the opportunities and making informed choices. This will have been the result of organized / increased pressure from students and parents, direct involvement of employers and businesses, and changed provincial government priorities and programs.

Second, all levels of the education system will be actively involved in environmental preservation as a result of significant societal disruption, eg., environmental, economic, political, or natural disaster; organized / increased pressure from students and parents; and other undetermined factors.

Third, students will acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career. This will have been the result of direct involvement of employers and businesses, changed provincial government priorities and programs, and organized / increased pressure from students and parents.

Fourth, all students exhibit a high degree of basic literacy and numeracy, i.e., reading, writing, communication skills, computation skills and logic. The catalysts for this change will have been changed provincial government priorities and programs, organized / increased pressure from students and parents, direct involvement of employers and businesses, community partnerships bringing new / more resources, federal government intervention and national planning, and pressure from teachers and administrators.

Fifth, students no longer focus on content, i.e., acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information.

Sixth, students will acquire the attitude that change is unavoidable and therefore that anticipation, planning and choice are important. This will have resulted from changed provincial government priorities and programs, significant societal disruption, direct involvement of employers and businesses, and pressure from teachers and administrators.

Summary

In summation, significant changes have been forecast to Canada's education system by around the year 2000. The panel of respondents in this study have forecast reforms to the three system elements of inputs and resources, processes and practices, and outputs and outcomes. Little of what has been forecast could be construed as radical transformation. However, the accumulated effect of the varied and numerous reforms might result in transformation or radical change to the existing system.

Chapter 8

APPLICATIONS AND IMPLICATIONS

This concluding chapter is in four parts. Part one is an application of the study, i.e., the forecast as a vision statement for planning purposes. Part two is a presentation of potential implications of the study findings for planned change. Part three is a discussion of the methodology with particular respect to its innovative intentions. Part four is a brief statement of future research issues and questions.

Application of the Study

As a forecast of the future, this study has a potential application as a planning tool. If the forecast is transformed into a vision statement of a preferred future, however, it becomes more readily applicable. A combination of the vast number of desirable and feasible ideas for change could conceivably form a national vision to guide planning for education in Canada. In fact, there have been calls for a national vision of education in Canada. Schlechty (1991) emphasizes that "one of the greatest barriers to school reform is the lack of a clear and compelling vision. One cannot get to the moon if one does not know what the moon looks like or where it is "(p. 137). Lewington (1992) notes that "even as schools are called to account, there is no consensus on what Canadians expect from them, now or in the future" (p. A6). The forecast resulting from this study is not "the" vision requested or required; it is "a" vision, the collective vision of the informed participants in this study.

Vision Defined

A vision is defined by Kouzes and Posner (1988) as an ideal and unique image of the future. In discussing the leadership role and responsibility for planning for the future, these authors use the term "vision" rather than purpose, dream, or goal because it evokes images and pictures as a visual metaphor; it suggests a future orientation; it connotes a standard of excellence, an ideal; and it has the quality of uniqueness. Used in this manner, a vision or vision statement is inherently positive.

According to Kouzes and Posner (1988), a vision is a necessary and natural planning device.

> When we invent the future, we try to get a mental picture of what things will be like long before we have begun the journey...All of us make efforts to see into the future, not in some mystical sense, but in a cognitive sense...Just as architects make drawings and engineers build models, leaders find ways of giving expression to their hopes for the future (p. 89).

The application, therefore, of this study is a utilization of the natural tendency of individuals in leadership capacities to envision or conceptualize a unique and ideal vision of education in and for the future of Canada.

In addition to being a natural planning device, a clear vision is also powerful. For example, according to Kouzes and Posner (1988), "when leaders clearly articulated their vision for the organization, people reported significantly higher levels of job satisfaction, commitment, loyalty, esprit de corps, clarity of direction, pride, and productivity. It is quite evident that clearly articulated visions make a difference" (p. 92-93). This, then, is the role of visioning in planning: "A vision is the force that invents the future (p. 9)."

The purpose of a vision, according to Handy (1989), is to "give point to the work of others" (p. 134). In order to do so, Handy (1989) says that a vision must be:

1. different, i.e., "a plan or a strategy which is a projection of the present or a replica of what everyone else is doing is not a vision; a vision has to "reframe" the known scene, to reconceptualize the obvious, connect the previously unconnected dream" (p. 134).
2. able to make sense to others, i.e., it must stretch people's imagination but still be within the bounds of possibility.
3. understandable, i.e., concise and free of jargon.

The choice of terminology to achieve these criteria means that a vision statement must be worded quite differently from other planning documents such as forecasts.

The process of visioning has been labelled, by Berger (1973), as the Prospective approach to planning. This approach has the advantage of broadening the options by ignoring present realities, at least at the outset.

> The Prospective approach begins in the future rather than the present and is dependent on having a guiding vision or "directing idea." One begins by defining ends which are noble enough to be generally pursued and thus can be incorporated into the culture of society. Then action can be defined through a constant interplay of ends, available means, and present reality. In consequence, goals are more important than methods and serve to direct methods. Further, the future no longer grows out of today's events but is actively prepared and planned for in the present (p. 245).

A vision may be a "dream," an ideal that may initially seem unrealistic, even fanciful. For this reason, all of the suggestions and recommendations for change judged by the respondents to be desirable and feasible in reality form a vision statement of a preferred future. As Schlechty (1991) notes, "visions are not reality. Visions are intended realities" (p. 89).

One practical application of this study is the framing of the findings as a vision statement. This vision statement is the combined effort of a number of individuals who are well informed about education in Canada, individuals who separately might have somewhat different visions but who, through the iterative Delphi process, have reached agreement on this preferred future. As a vision, it is different, able to make sense to others, and understandable. It does, to a large extent, ignore present realities and reconceptualize the obvious.

Transforming the forecast into a vision statement is a logical and practical use of the forecast. In fact, the

Delphi process of selecting those changes which are desirable and feasible effectively results largely in an "ideal." The forecast differs from the vision statement in that, by including those changes which are also probable, negativity is possible. For example, participants in this study forecast that there would not be additional financial resources to accomplish the wide number of positive changes and improvements predicted, thereby diminishing the "ideal" nature of the forecast. In transforming the forecast into a vision statement, the negative components are significantly minimized if not left to be surmised by "reading between the lines." As well, it is worth noting that the implications of what to one stakeholder group might be a largely positive change, to another might be negative. However, the iterative nature of the Delphi process and the particular questions asked in this study together support the transformation of the forecast of change into a vision statement of a preferred future.

The application of the findings of this study as a vision is for the purpose of planning. A vision is needed to guide positive, proactive change in Canada's education system. From a vision statement, explicit strategies for change can be derived and planned.

The Vision Statement

It is the year 2010 and Canadians operationalize education and learning in a manner only dreamed of in the late twentieth century. No longer is the formal education system separate from other institutions and practices in the community; it is imbedded with social services, economic and community development. For example, an industry of knowledge creation and marketing has developed in the post-secondary education sector which contributes substantially to Canada's economic success. At the other end of the spectrum, schools and post-secondary institutions act as a broker for support services in the community, coordinating and not duplicating services to meet the needs of students and seeking to prevent problems rather than trying to remediate them. Communities develop plans and solve problems in conjunction with the education system with its capacity to conduct research and provide human resources, professional and student.

The new education system is guided by a national vision of a better future for all Canadians. At the national level, the issues of education, training and retraining are dealt with in an interdepartmental fashion with a coordinating council. A federal/national department of training and education has been established to set standards in education, to define educational goals and to promote innovation. In general, excellence, effectiveness and efficiency have been defined for all levels of the system, and accountability focuses on results rather than on compliance with rules and regulations.

A lifelong learning culture has been adopted and systematized, i.e., self-directed education has become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity. Across Canadian society, from children to seniors, increased emphasis is placed on the need to remain current in one's field, and to develop new and different skills. All Canadians are expected to continue formal and informal learning, eg., through a personalized skills development plan; and computer-managed record keeping tracks individual students of all ages as they move around provinces and across Canada. All Canadians have access to quality basic education programs in their home communities. More direct support is available to unemployed and underemployed individuals to enter the education system. All potential students undergo extensive screening processes, including assessment of ability, learning style, and prior learning, to ensure that they enter programs best suited for them.

The critical relationship between quality of education and quality of life is demonstrated by the priority status of education in terms of resource allocation and political attention. As well, corporations reach deeper into the educational system to influence the quality of its supply of workers. Considerably more resources are available, for example as the school has extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts, and student mentors drawn from the community. Schools and universities "earn" extra income by attracting more students and/or providing new services. Disparities in financial resources between jurisdictions and provinces have been resolved through an equalization system.

Education has become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity. Students have become consumers, examining the opportunities and making informed choices. The government measures and publicizes many different kinds of results that consumers use to make choices: test scores, student satisfaction surveys, and dropout rates, for example. Students and/or their guardians have access to a great deal of information about educational options, program success rates, learning approaches, and unique features. Extensive career guidance programs, for parents and students, are geared to future employment needs and opportunities. Secondary students are treated like adult students rather than elementary students in terms of responsibility and choices. Schools are run on a contract or voucher basis, by many different organizations: teachers, colleges, community organizations.

A voucher system, which gives the allocation of school finance to customers, allows parents and adult students to choose between competing educational options. Secondary schools and universities specialize in such programs as science and technology, arts, international baccalaureate, modern languages, international business. In fact, schools have become completely deregulated, allowing for extensive specialization, variety, and competition.

Schools are open year-round, with three or four ongoing semesters, and the academic day, year, facilities and schedule are all flexible. Institutions never close. Shifts of regular students are followed by shifts of workers retraining, then a nightshift of users of the expensive computer and communications systems. The system provides flexibility and integration of age groupings so that individuals are not automatically limited to certain subject matter by age. The system of gradeless education, or program continuity, encourages students to work at their own level of ability instead of meeting specific academic standards. Time is irrelevant as all programs are completely modularized so that students can complete them at their own pace and because programs are open-entry/open-exit for all. All educational institutions support and demonstrate educational entrepreneurialism, with innovative and responsive programs such as "women in science awareness" programs.

In response to societal changes, there have been program changes such as extensive language readiness programs, early intervention programs to identify and support growing numbers of poor children, and special programs for students at risk of dropping out. There is an increased emphasis on the arts. All Canadian children have access to bilingual education in Canada's two official languages. There is more and different vocational training, with improved access to vocational and technical education and increased marketing to enhance its value.

The curriculum has changed to include global studies, international education and environmental education. As well, math and science offerings have been strengthened. New critical skills that have emerged are integrated into the curriculum of the pre-employment institutions. The curriculum is evaluated regularly for relevance to international society. The rigid structure and prescribed curriculum has been replaced with a relatively flexible structure, for example, non-traditional courses blend such traditional courses as math and science, or English and history. Objective evaluations in each subject area are set against provincial, national and international standards and all students are assessed in a national testing system. Theoretical and abstract knowledge is heavily complemented by experiment and experience, both in and out of the classroom, and experiential learning outside the formal education system is valued and validated. Through learning contracts, opportunities are made possible for extended work / study in the community, and all students have access to co-operative education programs.

With regard to instruction, direct skills instruction dominates as an means of teaching although there is an attempted balance between direct instruction and approaches to active learning through, for example, group work and simulation. Instruction is learner-centered and teacher-managed rather than teacher-centered. Most instruction and learning is individualized through microtechnology. Students are encouraged to assess their own performance, largely through technological means. The evaluation system has changed from a focus on what learners can't do to what they can do, that is, from a deficit model to an achievement/mastery model. Evaluation of each student incorporates portfolio assessment of his/her work and student assessment includes results beyond those which can be measured with paper and pen. Student progress at all levels is reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached. Student achievement is not compared with others but is based on individual progress and individual potential.

The teaching profession has changed, for example, with increased status and rewards being allotted to the profession. A team approach to work has lessened stress on teachers. Significant changes in teacher preparation have resulted in teachers with advanced knowledge about learning and effective teaching. In their preparation, teachers have experienced more practical work earlier, and have been evaluated at an early stage for attitude and suitability. Teachers have acquired advanced technological skills during teacher training and have opportunities to maintain enhanced skills. There are fewer professional teachers and more paraprofessionals in the schools, with teachers viewed as learning managers. More seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers. The personnel system provides rewards for success with students and real consequences for failure, and the results of student assessment are used to evaluate the effectiveness of teachers.

Administration is restructured to incorporate the distinction between educational leaders and school managers. Much administrative work is done by non-educators; administration encourages community input, even community control of some aspects. The cost of administration has been significantly reduced through considerable reduction in the size of the administrative structures. Administration includes a system for assessing innovations under controlled conditions by independent evaluators. There is provincial coordination of postsecondary educational institutions, and there is site-based management for all institutions.

Facilities and resources are not the same. As an example, uniform-sized, sterile classrooms have been replaced by facilities which enable large and small group instruction as well as independent study. Catering to all ages, physical structures have changed to accommodate students of mixed ages. Daycare for children and elders is available in all adult education institutions. Every school and every student has access to the use of audiovisual technology, CD-ROMs, remote data bases, and computers. The education system is integrally linked with the media as a learning resource. Existing community facilities are used as part of the school, for example, libraries, recreation facilities, science laboratories, computer facilities.

In terms of the outcomes of the education process, a large number of changes are in evidence. In general, national educational goals, objectives and standards have been established. The knowledge and skills to be acquired for all levels of education and training have been defined in a competency-based manner. More specifically, students, through the formal education system, become adept at functioning fully in society, acquiring practical work, life and citizenship skills. All students exhibit a high degree of basic literacy and numeracy: reading, writing, communication skills, computation skills and logic.

Students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work and career. Employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills. Students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities. Students acquire the attitude that change is unavoidable and therefore that anticipation, planning and choice are important. Students no longer focus on content or on acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, and access information.

For Canadian society at large, there is considerable change. All levels of the education system are actively involved in environmental preservation. Social equity is promoted by addressing the needs of special groups, and the critical role of the public school as an equalizer in Canadian society has been retained.

In summation, education has been redefined as more than an academic endeavor that takes place in schools, and extensive coordination exists between the variety of teaching/learning agencies in society. The education system accepts responsibility for promoting positive proactive change rather than maintenance of the status quo.

In conclusion, this vision statement could serve as a planning document. Typically, the process would be to compare and constrast the vision statement to the current reality, and make actual step-by-step plans to address the discrepancies that are identified. In this manner, the vision is achieved over time.

Implications of the Study

This study has been a forecast of change in Canada's formal education system. The implications may be considered from at least two perspectives, first with regard to potential paradigm shift in education and second as a part of planned change.

From Vision Statement to Paradigm Shift

Should most or all of this study forecast come about, the Canadian education system will have been radically transformed, possibly to the degree of paradigm shift. There is a direct relationship between visioning, change in general, and paradigm shift in particular.

In some respects, a vision statement might be termed a paradigm; it is a changed paradigm that can be contrasted to the current paradigm. Kuhn (1970), who is credited with bringing the term into common usage, defines paradigm as the values and beliefs shared by the members of a scientific community that determine the choice of problems which are regarded as significant, and the approaches to be adopted in attempting to solve it. Ferguson (1980) defines paradigm as "a framework for thought; a scheme for understanding and explaining certain aspects of reality" (p. 26), and applies it in a socio-political sense. Deblois (1979) points out that a paradigm, as a conceptual framework, includes a metaphysical dimension, an artifact or construct dimension, and a sociological dimension. Thus, these three dimensions are one means by which to describe and compare the existing paradigm and the changed paradigm of the public education system in Canada, as depicted in the vision statement. The accurate and comprehensive description of neither the current paradigm of Canada's education system nor the changed paradigm is within the scope of this study. However, the description of the changed system, as forecast in this study, implies a set of values and beliefs shared by the members of the Canadian community, the choice of societal problems which are regarded as significant, and the educational approaches to be adopted in attempting to solve them, that is, the changed purpose and outcomes of the system. As a paradigm, the vision statement comprises theoretical and practical dimensions of an educational system within the larger societal context, both of which have changed, that is to say, the changed inputs, processes and external environment of the system.

Although paradigms change, the term "shift" is used, suggesting that the change may somewhat abrupt, possibly irreversible. Ferguson (1980) defines paradigm shift as "a distinctly new way of thinking about old problems" (p. 26). To Toffler (1980), a paradigm shift is "a reconceptualization" (p. 239). Gleick (1987) describes paradigm shift in this way.

> New hopes, new styles, and, most important, a new way of seeing. Revolutions do not come piecemeal. One account of nature replaces another. Old problems are seen in a new light and other problems are recognized for the first time. Something takes place that resembles a whole industry retooling for new production (p. 39).

He says that a paradigm shift "completely changes what it means to know something" (p. 175). Inherent in the definition of paradigm shift is the concept of stress and crisis, of pressure building to a sudden change much like what happens in nature. According to Ferguson (1980), "change occurs in large leaps following a slow accumulation of stresses that a system resists until it reaches the breaking point. Heat water and it eventually reaches a boiling point" (p. 160). Toffler (1980) also emphasizes that crisis is part of the process of paradigm shift:

"Trends, no matter how seemingly powerful, do not merely continue in a linear fashion. They reach tipping points at which they explode into new phenomena" (p. 129). An examination of the forecast or the vision statement resulting from this study reveals a transformed education system, the result of internal and external stresses described in Chapter 2 and 3, that are currently building, possibly to a crisis and paradigm shift.

The Potential Paradigm Shift

Were the changes forecast in this study to come about, the cummulative effect would amount to paradigm shift, a vastly different organization, as sudden changes occur in the characteristics of the organizational paradigm. Clark (1985) depicts organizational paradigms as having seven polarities and paradigm shift following a crisis somewhere along the continuum as an organization moves from simple to complex, from hierarchic to heterarchic, from mechanical to holographic, from determinate to indeterminate, from linear causality to mutual causality, from assembled to morphogenic, and from objective to perspectival. The following examples drawn from the study serve to demonstrate that these types of changes are happening.

First, Canada's education system, according to the forecast, would move from simple to complex, that is, from a holding pen for a particular age group or an academic preparation institution to a wholistic community service. This is evidenced by such projected changes as schools and post-secondary institutions acting as brokers for support services in the community, coordinating and not duplicating services to meet the needs of students, and seeking to prevent problems rather than trying to remediate them. Similarly, the shift from simple instructional institution to multi-faceted learning system would be evidenced as theoretical and abstract knowledge become heavily complemented by experiment and experience, both in and out of the classroom, and experiential learning outside the formal education system becomes valued and validated.

Second, the education organization would be seen to move from hierarchic to heterarchic, or from a bureaucratic structure to a "net of mutual constraints and influences" (Clark, 1985; p. 70). Evidence of this shift would be the transformation of educational administration through shifted responsibilities and roles, flattened structures, community and stakeholder involvement. As well, this shift would be made manifest, strangely enough, by the increased role of the federal government, not as the supreme authority hierarchically, but as a participant in a heterarchic decision-making system. It has been forecast that, as an example, national goals, objectives and standards will have been established; and that disparities in financial resources between jurisdictions and provinces will have been resolved through an equalization system.

Third, Canada's education system would shift from being mechanical to holographic, that is, from predictably mechanistic to multi-dimensional. An example of this would be the transformation of the education system into a knowledge industry. It has been forecast that schools and universities will "earn" extra income by attracting more students and/or providing new services; that communities will develop plans and solve problems in conjunction with the education system with its capacity to conduct research and provide human resources; and that an industry of knowledge creation and marketing will have developed in the post-secondary education sector which will contribute substantially to Canada's economic success. In short, the education system would almost cease to be a system as currently defined; certainly, it would not be a closed system.

Fourth, there would be a shift towards the operation of the system as an organism interacting with and responding to the multiplicity of individual needs. Using Clark's terms, there would be a systemic move from assembled to morphogenic, and from objective to perspectival, through the implementation of such changes as the systematization of a lifelong learning culture. The study predicts that, instead of determining age-specific outcomes, Canadians education, beyond the basics for children, will have become self-directed, and learning will have become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity. Education will have been been redefined as more than an academic endeavor that takes place in schools, and extensive coordination will exist between the variety of teaching/learning agencies in society.

Fifth, Canada's education system would be viewed as moving from determinate to indeterminate by the shift in intended system outcomes. For example, students will no longer focus on content or on acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, and access information.

Finally, the evidence for a shift from linear causality to mutual causality would be found is such changes as education becoming consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity. Students would become consumers, having access to a great deal of information about educational options. Governments would measure and publicize many different kinds of results that the consumer would use to make choices in schools. An educational organization would comprise a variety of forces for generating the intended outcomes.

The combined effect of these changes may be a paradigm shift in Canada's education system. Clearly, if the forecast changes come about, the emerging system will be radically different from the current system in terms of organizational purpose and structure. The utility of a forecast of change or of a vision statement is in working backwards from it to plan for positive change, to be prepared for paradigm shift, and to avoid negative change.

Using the Forecast for Planning

The conclusion or forecast has application as a planning tool, and it has implications for the implementation of planned change. For change to occur in education, according to Schlechty (1991), the following five functions must be fulfilled:

1. the nature of the change must be conceptualized, i.e., the conceptualizing function;
2. people who are going to be called on to support the change but who were not involved in the conceptualization process must be made aware of the change, i.e., the marketing function;
3. feedback from those who were not involved in the initial conceptualization but who will be called on for support must be solicited and, where possible and appropriate, incorporated into the change process, i.e., the developmental function;
4. activity to implement the change must begin, and people must be motivated to act in directions indicated by the change, i.e., the implementation function; and
5. a system of ongoing support and training must be provided for those who are being asked to support the change, i.e., the service and support function.

The forecast and/or vision statement from this study fulfills the first step: the conceptualizing function. The potential catalysts for the forecast changes may serve to guide the remaining functions of marketing, development, implementation and service/support.

Catalysts for Change

For each of the specific changes forecast as being probable, desirable and/or feasible, potential catalysts to bring about that change were identified. An analysis of these catalysts has application in understanding the relationship between the forecast changes and the initiation or implementation of such changes.

In the conclusion of the study, 53 changes were forecast for around the year 2000. For each change, the top three potential catalysts for bringing about that change were determined; however, often a first-to-third position was shared by more than one catalyst having received equal weighting by the respondents. Therefore, for the 53 changes, the eight potential catalysts shared 182 ratings for first through third position. The outcome was as follows.

Rated as among the top three catalysts	**Necessary catalyst that would or could initiate a change**
12.6%	- organized / increased pressure from students and parents
13.2%	- direct involvement of employers and businesses
7.7%	- significant societal disruption, eg., environmental, economic, political or natural disaster
23.0%	- changed provincial government priorities and programs
8.8%	- community partnerships bringing new / more resources
7.7%	- federal government intervention and national planning
13.2%	- pressure from teachers and administrators
13.7%	- other / none of the above

Clearly then, in terms of necessary catalysts, changed provincial government priorities and programs were considered to be most significant at 23 percent. It might be concluded, for example, that the primary target for planned change should be provincial governments, politicians and bureaucrats.

It may also be observed that there is relatively little liklihood, in the opinion of the respondents, that either federal government intervention, significant societal disruption, or increased community partnerships will be major factors in the forecast changes. From this it might be concluded that the respondents have little expectation that some outside intervention will bring about change.

A third observation is that some "other" factors are considered to be relatively important; this concept would be worthy of further investigation as the researcher clearly was not able to consider all factors that might serve as catalysts.

A final observation is that the primary stakeholders in Canada'a education system, the parents and students, employers and businesses, and teachers and administrators, equally share a significant role as catalysts in change. In fact, combined, they hold a rating of 39% and this might signify a source of authority to bring about change.

From a different perspective, the various stakeholders and their opportunities/responsibilities to be catalysts for change differ over time. The following chart lists, for the changes anticipated before and after the year 2000, the percentage in which each change catalyst is involved.

	Before year 2000	**After year 2000**
- provincial government	80%	94%
- federal government	20%	29%
- community	30%	29%
- educators	40%	53%
- parents and students	30%	41%
- employers and business	70%	35%
- societal disruption	20%	24%

From this analysis, it might be concluded that business and industry in Canada will be less involved in initiating change after the year 2000, possibly because their objectives for change will have been met. The increasing involvement of the provincial governments might lead to the conclusion that, despite considerable federal involvement, the provincial responsibility and activity is not diminished in any way. Finally, it seems that limited societal disruption is anticipated.

Assigning Roles and Responsibilities

Within the forecast developed by this study, primary opportunities and/or responsibilities for bringing about change have been assigned to the various stakeholders.

Earlier it was emphasized that educators and educational administrators have a particular responsibility for planning and ensuring a better future for all Canadians. From this study, they have been assigned responsibility to work towards: special programs for students at risk of dropping out; non-educators to assume much administrative work; a balance between direct instruction and approaches to active learning; increased emphasis on the need to remain current in one's field; increased status and rewards; flexible instructional facilities; a team approach to teaching; flexible, year-round scheduling; new forms of student evaluation; a mix of theoretical knowledge and practical application; a curriculum which provides a better understanding of humanity; a curriculum that emphasizes practical life skills; significant changes in teacher training and more practical experience while training; early intervention programs for poor children;increased use of learning contracts and community work; access to greater information about program success and unique features; the treatment of secondary students like adults; evaluation focusing on what students can do rather than on what they can't; competency-based description of learning outcomes; learner-centered and teacher-managed instruction; flexible curriculum structure; high achievement levels in literacy and numeracy; and an acceptance that change and planning are unavoidable. Those working inside the education system have a long and weighty list of goals to achieve if the vision statement is to become reality.

Through the forecast of change, the federal government has been asked to strengthen the math and science curriculum; ensure extensive language readiness programs; develop an equalization system; provide equitable access to quality basic education in home communities for all Canadians; institute a lifelong learning culture; define excellence, effectiveness and efficiency at all levels of the system; develop national educational goals, objectives and standards; provide early intervention programs for children at risk due to poverty; ensure more direct support to the unemployed and underemployed to enter the education system; participate in the process of defining knowledge and skills in a competency-based manner; ensure that high levels of achievement in basic literacy and numeracy are achieved by all students; and provide for flexible, year-round schooling. Interestingly, from this study, it would seem that, although both are priorities for federal activities, it is not a role of the federal government to be involved with either drop-out prevention, or the development and marketing of a knowledge creation industry.

Most importantly, because it is has been determined to be the primary target for change, some of the primary responsibilities of the provincial governments are to: lower the drop-out rate through programs reflecting the input of those young people; ensure that educational institutions find means by which to generate income; ensure that educational administration is modified to include significant numbers of non-educators; provide for a considerably different curriculum, including global studies, environmental education, more math and science; instituting a lifelong learning culture; ensure that all Canadians have access to basic education in their home communities. Changed provincial government priorities and programs are, in fact, implicated in the majority of forecast changes, and this is reflective of the current jurisdictional authority for education.

Interestingly, the consumers have a somewhat different and limited list of responsibilities or opportunities to be catalysts for change. It has been forecast that secondary students will be treated like adult students, and information about educational options will be made available, if and perhaps only if, students and parents increase pressure for such changes. This possibly reflects the assumption that the consumers most significant avenue for change is political influence to change government programs and priorities.

In summation, explicit lists of tasks or opportunities for each stakeholder group may be extrapolated from the catalysts for changes. These could serve to guide and undertake the change functions of marketing, development, implementation and service/support for planned change, were this vision statement to be implemented.

Obstacles to Change

Again, in this study, a number of changes were judged to be both desirable and feasible but improbable; therefore, respondents were asked to speculate on the possible reasons for non-occurrence. The six potential obstacles were categorized as being economic, social, technical, political, other or non-existent. The outcomes were as follows.

Percentage	Obstacle or reason for non-occurrence
16.2%	- economics (financial considerations)
14.3%	- social (disruptive consequences)
12.1%	- technical (too difficult)
26.6%	- political (power struggles)
7.7%	- other
23.2%	- no obstacle

Clearly, political obstacles are the most significant barriers to the changes forecast to Canada's education system in the opinion of the study respondents. This relates closely to the concept of changed provincial priorities and programs as a necessary catalyst for change. It may be concluded, not surprisingly, that "politics" has a relatively large role to play in initiating or preventing change.

Managing Change

An awareness of obstacles to change and catalysts for change has implications, then, for the process of planning for and initiating positive, proactive change. Education is about change. Learning and change are ubiquitous, for individuals, for organizations and systems, for society at large. Change, like learning, can be positive or negative, unanticipated or planned, major or minor, long or short-term. As Canadians are demanding change in their education system, they are demanding that "it" learn, that it acquire a changed and improved form. Positive change can be managed through debate, planning and learning.

Changes in any of the three elements of the system, the resources, processes, and/or outcomes, will have obvious repercussions for all of the other elements. Minor modifications or reforms to any element may have unanticipated results elsewhere. A thousand small incremental changes might combine to bring about the change that is forecast, change that is a paradigm shift.

A variety of approaches to substantial change in the education system have been generated by scholars and writers specializing in societal and educational change. Each one can be used as a starting point to examine the problems and to initiate the process of transformation. There are at least seven different approaches, based on the literature on educational reform, that would ultimately incorporate most or all of the changes forecast in the study, and would result in a transformed education system.

One approach is to examine the whole education system, past, present and future, through the prevailing view of childhood. Dixon (1992) argues that all changes needed in the current system must be predicated on a realization that childhood has changed. The students, as raw material and as finished product, have changed. Young people are experiencing different family structures and stresses, greater mobility, increased awareness of wider society through TV, increased exposure and involvement in crime, different pressures, responsibilities, and opportunities. The same may be said for adult students as well. With this as a basis, the processes and practices of the system must be adapted to accommodate a radically different type of student from those who existed at the initial development of our current system. Clearly, different resources, such as increased counselling and support services, would be needed and different outcomes, such as fewer drop-outs, would result. This approach to educational change would find advocates in those working to reduce childhood poverty, to produce a national childcare system, to provide increased health care and support services in the schools, and to develop appropriate options for youth contemplating leaving school early.

From a second perspective, the entire education system could be transformed on the basis of system outputs or outcomes. By focusing only on what the system is expected to produce, all other facets of the system would be changed. For example, organizations and agencies that represent big business in Canada want the system to produce employable workers. Lists of appropriate skills have been generated, by the Conference Board of Canada and others, that could serve as the basis for curriculum and instruction, and changes to all other elements of the system would follow. At the other end of the spectrum, organizations that represent social and political issues want the system to produce capable, well-rounded and informed citizens. Because there are contradictory options from which to choose about what "graduates" should be able to do, this approach to educational change logically entails a full discussion of and resolution to the question of purpose of our formal education system. This has been urged by the Economic Council of Canada, the Conference Board of Canada, the Prosperity Steering Group and other national agencies. The changes to the system would work backwards from the statement of expected outcomes, for example, different timeframes and instructional techniques might be required, different types of experts, different facilities, and all are forecast in the study.

A third approach to changing the formal education system is through an examination of the concepts of learning and education. In his discussion on the management of learning, Thomas (1991) points out that our current education system is based on a concept of learning as a restricted activity carried out within a rigid system. This concept is outdated and erroneous; learning in fact takes place on a continuous basis in all venues and contexts. As some of the most effective learning actually takes place outside of the educational domain, it is conceivable that the Canadian education system would be transformed by a redefinition of education that includes and provides formal and non-formal learning opportunities. This, of course, is closely tied to such forecast changes as a lifelong learning culture, including credit for prior learning; the changed role of teachers and learners through reciprocal teaching and/or mentoring; increased use of technology and individualization of instruction; and significantly altered assessment procedures. Such changes in process would result in a vastly altered product and would require vastly different input resources.

A fourth approach to changing Canada's education system would be based on the changing role of knowledge and information in relationship both to power and to production. This is the philosophical approach taken by Schlechty (1991) in his book on educational reform. Because knowledge, more than military strength and more than financial wealth, has become power, the education system must produce individuals who can generate, manipulate and utilize knowledge successfully. Because knowledge-work will replace manual industrial labour as a primary source of employment, students must learn to be successful knowledge workers. In schools as knowledge-work organizations, the student becomes the customer and worker, the teacher becomes a leader and inventor, the curriculum becomes the raw material with with students work, and self-regulation replaces bureaucratic control. As forecast in the study, student success becomes the purpose of schools, success at knowledge work rather than degrees of failure at knowledge work. Not only does the output or product of the system change, then, but the entire process of teaching and learning switches emphasis from content to process.

In a fifth approach, administration and decision-making would be the underlying focus of pivotal change. Currently, layers of bureaucracy remove democratic decision-making from those most directly involved in production or in consumption. Chubb and Moe (1991) argue that school administration should be transformed into site-based management supported by a centralized network for setting of standards, student referral and information-gathering services. This would transform educational institutions into independent enterprises, creating choice for the consumers. The fundamental change in this circumstance would be in the role of government, the nature of administration, and the role of the consumer in educational decision-making, all as forecast in the study. Those advocating voucher systems, amalgamation of school boards, national standards and national testing would be party to this approach.

A sixth approach to educational transformation would focus on curriculum content. At this time, subjects are separately delineated, tradition dictates that the core remain the same, and time restrictions prevent the introduction of much that is new or different. In terms of content alone, some educational stakeholders feel that, not only are students being taught things they do not need to know, but they are not being thaught that which they do need to know. Many futurists, including Drucker (1993), Gore (1993), Suzuki (1989), and Ornstein and Ehrlich (1989), clearly state that the curriculum content of our current educational system is inadequate and inappropriate. A new and relevant curriculum might include more "real life" skills, more global and human survival issues, more technological skills, more problem-solving skills. All are forecast in the study, and these changes to the content and process of teaching would necessarily require teachers with different skills and training and materials. Similarly, it would result in students with different abilities and knowledge.

A seventh, but by no means final approach to transformation of an education system would focus all change in education on the personnel directly involved. Fullan and Stiegelbauer (1991) state that, if teachers and professors are those who must understand and implement changes to the system, then change must begin with them. Elmore and Associates (1991) argue for increased rewards for teachers, increased opportunities to lead change efforts, and increased accountability through evaluation in the process of reforming education in America. Schlechty (1991) has concluded, after years of research and practical experience, that there are four basic values toward which educational reform efforts must be oriented if they are to gain the support of teachers and administrators: the need for positive recognition and affirmation; the need for variety, both intellectual and professional; the need to feel that what one does makes a difference and that doing things differently will make a difference as well; and the need for affiliation and collegial support and interaction. The wide variety of forecast changes, in initial and on-going training, in working conditions, in tenure and benefits, in responsibility and accountability, in evaluation and rewards, would address these needs and bring about change. As a resource which to a large extent controls most processes and practices in the education system, instructors and administrators in the system could be the focus of concerted change that would propel significant changes in the other system elements.

These approaches are not discrete, and they may be mutually supportive. The question then, is not which one is better or most appropriate; the question is really where to start. Many futurists and global leaders clearly state that unless we radically change what we are teaching, global survival is threatened by environmental and sociopolitical catastrophe. Some corporate representatives and economists claim that the product of the system must be changed or the North American economy will be destroyed. In order to bring about positive, proactive change, the following fundamental questions must be addressed.

1. Who are the customers of the system and what are their real needs? Who are the producers and what are their needs?
2. What should the purpose of the formal education system be?
3. What do Canadians, young and old, need to learn and where is it best learned? Who should provide and manage those learning opportunities?
4. Should knowledge acquisition and utilization be the content or the process of formal education?
5. What are the primary decisions about education and where should they most appropriately be made? What role should consumers have in decision-making?
6. How can the formal education system prepare individuals for the future? What content and skills need to be transmitted?
7. Who should organize and lead educational transformation? How can the primary stakeholders be encouraged and assisted in the process?

One set of answers to these questions is implied by the outcome of this study; that is, the vision statement may be viewed as but one holistic answer to the fundamental questions.

The Research Methodology

As was stated earlier, the methodology of this study was innovative in many respects. Computers and telecommunications were used in an unprecedented manner, largely with success.

was innovative in many respects. Computers and telecommunications were used in an unprecedented manner, largely with success.

The Positive

There are a number of advantages to using technology as it was in this study: a computer-managed Delphi using telecommunications technology. First, the time to complete the study was significantly reduced:

1. by faxing questionaires rather than mailing them;
2. by phoning in responses rather than faxing or mailing them;
3. tabulating responses and managing the data by computer.

Secondly, management of the study was immediate; at any given time, the actual participation rate and actual respondents could be ascertained from a check of personal identification numbers (PINs). Third, the innovative combination of two rather ordinary technologies, telecommunications and computer, resulted in a positive curiosity factor. Many individual respondents were interested to see if they could make it work and if they could use it themselves for projects.

In particular, the concept of a toll-free line with computer managed data-gathering was a real benefit. There was no direct cost to the respondents, apart from their time. The actual cost of the data receipt and management,

The Negative

On the negative side, the process was not without problems and a number of lessons were learned. First, for example, was the often difficult length and conceptual complexity of questions. Respondents sometimes felt that questions contained too many concepts to which contradictory responses were required. The phrasing of questions could have been shorter and simpler in order to facilitate easier responding. The number of questions seemed overwhelming and should have been reduced.

As well, telecommunications are not without flaws. For example, there is no means by which to guarantee that a fax has been received, and faxes do go astray quite often. To check by telephone if a fax has been received literally doubles the telecommunications cost of the study. As well, not everyone has a private fax machine, and this is a problem in a study that is supposed to be confidential. Often a fax arrives at the central fax machine in a large office or department, passes through sorters and handlers, and eventually lands on the respondents desk. Anonymity is further diminished if a broadcast fax function is used because names must be attached to the receivers. Quite likely, computerized facsimile transmission could reduce the magnitude of the problem.

In some ways, the technology is inherently limiting. In general, a substantial degree of functional literacy is required of respondents. More particularly, the number of response variables is limited by the number of keys on the touchtone telephone. The distribution of the questionnaires is limited by the availability of facsimile machines unless secondary measures are used. If the postal system is used, as it was in this study, the response timeframes can be negatively affected.

Finally, some respondents experience frustration with the process. For some, the response time between questions was too long, for others, too short. For some, the attempted inclusivity of the questions was too restrictive. For others, the rigor of the study was too demanding.

Conclusion

Despite the problems experienced in this pilot project, the processes employed for data gathering and analysis were very rewarding. Clearly, with refinements, the process has enormous applicability in research and in democratic decision-making. A telecommunications-based, computer-managed modified policy Delphi can, as suggested by Drucker (1989) and Osborne and Gaebler (1993), promote participatory democracy. Such an instantaneous electronic plebiscite can provide an opporunity for countless stakeholders to have an equal say on any number of issues, within an educational institution or across a nation. By adding the iterative

Delphi procedure to the available technology, decision-making can be speeded up and refined at an affordable cost.

Suggestions for Further Research

This study was, in many respects, a pilot of a study that should be replicated. While a significant number of individuals from across Canada had an opportunity to participate, there is no particular reason for huge numbers of individuals not to participate. The study could be replicated using the media (television or newspapers) to introduce the concepts and pose the questions. The cost of a toll-free line with computer-management of data is minimal. Certainly the findings and the forecast would have greater applicability if more individuals were involved. Foremost, then, an effort should be made to refine and replicate the study.

As important as the forecast changes are those which were deemed to be desirable but improbable changes (Appendix 7.11) because of serious obstacles. Research is needed to determine how desirable they really are and how obstacles can be removed if warranted.

Following on this study and/or its expanded replication, a program of research would include a comparison of the outcome/vision with the literature on organizational effectiveness with a view to determining the degree of match between anticipated changes and the ideals of organizational and educational excellence.

In order to explore the possible implementation of the vision statement, a number of research questions must be addressed.

1. If these changes are to be implemented, what are the critical values held by the various constituencies who would be affected?
2. Are these values likely to be manifest in different ways by different groups or subgroups?
3. Which of these values are likely to be served by the change and which will be threatened?
4. How can the proposed change be organized and implemented so that the values served are increased and the values threatened are minimized?
5. Can these modifications be made without threatening the integrity of the change? If so, why not make them? If not, are the proposed changes possible at the present time or will lack of support eliminate the possibility of success?
6. If the change is not possible, what might be done to prepare the situation for change?

Further to that, research is needed to explore and answer some interesting questions that have surfaced in the process and outcomes of the study. First, in the list of primary obstacles to changes that should happen because they were desirable and feasible, "other factors" were considered to be relatively important. This concept is worthy of further investigation as the researcher clearly was not able to consider all factors that might serve as catalysts for or obstacles to change. Second, there is much mention of a lifelong learning culture. Research could provide insight into the dimensions of such a culture, such as the mechanisms for implementation of the concept, the appropriate participants in its implementation, and the degree of implementation in contemporary society. Third, if change is needed, research is required to determine the methods by which change catalysts can be animated in a positive fashion and how obstacles to change can be removed. This is particularly the case with provincial and federal governments.

Looking into the future, research is required to define and implement the concepts of effectiveness and efficiency in education; improve teacher education; increase educational entrepreneurialism; animate parent and student involvement in change; gather the data that consumers need to make informed choices in education; and compare innovations already under development. These and other changes were listed but not adequately explained within the forecast of change which was the outcome of the study.

Conclusion

Both the process and the content of this study have potential use in bringing about constructive change in Canada's education system. The combined wisdom and experience of committed Canadians from all stakeholder groups can examine and improve all elements of the system if they have a vision of a preferred future. In its absence, forecasts such as this study give some insight into potential changes with catalysts and obstacles.

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Appendix 6.1

ROUND 1

PACKAGE OF MATERIALS

Kathryn Chang Barker
11644 - 103 Ave, Edmonton, AB T5K0S6

April 14, 1993

Dear--------

This letter is an invitation to participate in a research project that will examine and forecast change in the education system in Canada.

The study and the purpose

This study is my dissertation research for a doctoral degree in Educational Administration at the University of Alberta.

The purpose of this study is forecast potential reforms and transformations to the Canadian system of education. In order to predict what the future state of Canadian education might be, this study is a forecast of the desirability, feasibility, probability, importance and period of occurrence of changes to the education system in Canada. For purposes of this study, the education system in Canada is understood to be the interrelated set of formal learning systems from kindergarten to post-secondary education and training which is publically funded; however, it is not restricted to this.

The outcome of this study may have applicability in planning and policy development.

The respondents

In total, 45 prominent individuals from all across Canada are being asked to assist me in this study. An effort has been made to achieve balanced numbers from the following categories of potential respondents:

1. Producers
    - 1.1 teachers and administrators
    - 1.2 teacher educators and educational academics
    - 1.3 government departments, agencies and policy makers

2. Consumers
    2.1 students and parents
    2.2 leadership from business and industry
    2.3 informed and concerned citizens

Undoubtably, there is overlap between these categories.

You have been selected as a potential participant because of your acknowledged leadership in education and/or your particular awareness of issues in educational reform. I will be deeply honored and grateful if you agree to this request.

The process

The methodology for this study is innovative and experimental: a computerized policy Delphi using telecommunications technology almost exclusively. This means that, as a participant, you'll receive your directions and give your input via the telephone in an automated format: no pens, interviews or computers. The data to be gathered and analyzed is informed personal opinion. This is explained more fully in Document D2: **Delphi Process: Respondents' Timelines**.

The Delphi technique is a forecasting procedure for obtaining, exchanging and developing informed opinion about future events. The use of a policy Delphi is typically to inform the creation of public policy. A Delphi is a series of questionnaires that begins with a general question, feeds back the accumulated responses, and asks narrowing questions in subsequent rounds.

This means that, as a participant, you'll input your opinions 5 times over a period of 2 months. The first round may take approximately 1/2 hour; subsequent rounds will be approximately 10-15 minutes. There will be no cost to participants as a 1-800-number will be used. Telecommunications costs have been donated by Comtel as this process is a pilot use of its developing technology. All you need is a telephone; access to a fax machine will be advantageous but not critical.

This methodology has intriguing applications for group decision making, policy development and "teledemocracy." I am as excited about the process as by the potential outcome of this project. At the conclusion, I will welcome your input about the process.

Ethical considerations

As the researcher, I agree to respect your privacy and individual limitations as a study participant; provide direct answers to your questions of process and purpose; and allow you to withdraw if you feel you need to.

As a study participant, you are to understand that your responses will be confidential but that the study findings will be made public. As a respondent, you are asked to agree to consider and complete the questions based on your own experience and knowledge, and to work within the established timelines.

Initiation of participation in this study by commencing Round 1 is considered to be acknowledgement of these ethical considerations.

Contents of the package

Following this letter is more detailed information, including:

1. a background / discussion paper to stimulate your thinking
2. my CV so that you may feel comfortable cooperating with me
3. actual procedures and timelines for the study D2
4. the Round 1 question and response format D3

Getting started

If you would like to discuss this with me, please do not hesitate to call me at my home office: 403-482-1190.

If do not wish to participate, simply trash this package, although I would appreciate a call from you.

If you do intend to participate, please follow the Procedures as outlined in this package, using the following personalized identification number (PIN):

Sincerely,

Kathryn Chang Barker

Kathryn Chang Barker
phone: 403-482-1190 fax: 403-482-0066

Forecast of Change in the Canadian Education System

Kathryn Chang Barker
403-482-1190
University of Alberta
Educational Administration

DELPHI ROUND ONE: Instructions

In order to predict what the future state of Canadian education might be, this study is a forecast of the desirability, feasibility, probability, importance and period of occurrence of changes to the education system in Canada.

For a variety of reasons, the education system in Canada is changing. There are growing criticisms and demands for change from stakeholders, and there are new opportunities presented by societal changes. The education system of the future in Canada may look somewhat different or it may look radically different. The purpose of this study is to forecast change, using the opinion of informed individuals, and to thereafter generate a potential view of Canada's education system in the foreseeable future.

Some changes are incremental, that is, small changes intended to result in improvements or reforms to the existing system. Other changes are of a greater magnitude, possibly resulting in major differences or transformation of the existing system. Thus, for purposes of this study, change can be either reform or transformation.

For purposes of this study, the education system in Canada is understood to be the formal learning system from kindergarten or ECD to post-secondary education and training which receives direct government funding. However, it need not be restricted to this.

This study presents the opportunity to envision ideals, that is, to feel free of conventional restrictions and to be creative. The research question is not: What needs to be changed but probably never will?

The Round 1 question is:

What, in your opinion, should be changed about the education system in Canada?

In order to discuss changes, the education system has been broken into the following three system elements: inputs and resources, processes and practices, outcomes and outputs.

Please note:

You are free to add categories, as many as you'd like, to any or all system elements. The categories and sample issues are intended only as prompts.

You may comment on any or all of the categories within the system elements. You are not expected to comment on all of them in order to have completed Round 1.

In Round 1, your voice will be recorded as you present your opinions about change in one or more of the system elements listed in these Round 1 instructions. You might like to prepare your verbal responses prior to entering the recording system. This is the only round in which there will be voice capture.

The responses, sorted by numbered categories, will undergo content analysis and combine to form the basis of the following rounds. All of the responses will be included in the study, in addition to suggestions for change from the literature in the field of educational reform and from futurist literature.

The Process for Round 1: Between April 26 and May 7

Please refer to document D2

DELPHI PROCESS: RESPONDENTS' TIMELINES

Elements of the education system that could/should change:

1. THE INPUTS OR RESOURCES OF THE SYSTEM:

11 entering students (eg. readiness, numbers, needs)

12 personnel (paid and volunteer instructional, administrative and support staff) (eg. preparation, quality, appropriateness)

13 finances (eg. amounts, sources, fees)

14 available and unused resources (community, national, international) (eg. accessibility, equitable access)

15 physical facilities (classroom, office, recreation, library, parking space, transportation) (eg. adequacy, appropriateness)

16 technological equipment for management (computers and office equipment) (eg. adequacy, utilization)

17 technological equipment for instruction (computers, audiovisuals, library technology, telecommunications)

18 student support services (counselling, health services, child care, financial support)

19 staff support services (professional development, teaching assistance, peer support, professional support services)

110 teaching resources (curriculum, materials, technology, library, field trips)

111 adminstrative structure (local, provincial, national)

112 stated goals and plans (for students individually and collectively, for local and national goals)

113 time (semesters, commencement and completion periods)

114 organizational culture (values and norms, interpersonal relationships and communications)

115 institutional organization (size, structure, decision-making)

116 other(s):___________________

2. THE PROCESSES AND PRACTICES IN THE SYSTEM:

21 student assessment (pre- and post-instruction)

22 student recruitment and program marketing

23 instructional methods and strategies

24 formal program plans and intended outcomes

25 informal learning opportunities and resources

26 supplemental programs (sports, enrichment, remedial)

27 student learning management (individualization, streaming)

28 logistics (class size, class length, semester length)

29 student management (discipline, motivation, rewards, counselling, retention)

210 staff management (evaluation, incentives, recognition, career paths, retention,

211 administrative behavior (teacher supervision, community interaction, learner involvement, planning, responsiveness)

212 involvement with community (parents and business)

213 links to other programs and services

214 program evaluation, development and accountability

215 interaction with the external environment (leadership, future orientation, responsiveness to government and to societal stresses)

216 other(s):___________________

3. SYSTEM OUTPUTS OR OUTCOMES:

31 individual students (achievements, changes, attitudes, skills)

32 students collectively (opportunities, responsibilities)

33 local community

34 Canadian society (short-term, long-term)

35 employers

36 teachers, support staff and volunteers

37 administrators and institutions

38 government departments, funders and policy makers

39 other(s):____________________

1. Between 26 and May 7, Round 1:
    - 1.1 dial 1-800-465-1742
    - 1.2 enter your PIN
    - 1.3 enter your fax number or mailing/courier address (subsequent round questionnaires will be sent automatically when ready)
    - 1.4 follow voice prompts for Round 1
    - 1.5 sign off

2. By May 21: Round 2
    - 2.1 enter study with 1-800-465-1742 and PIN
    - 2.2 enter R2 responses and sign off

3. By May 28: Round 3 (same process as Round 2)

4. By June 4: Round 4 (same process as Round 2)

In Round 1, the elements of the school system had been broken into three major categories or system elements with numerous subcategories:

1. inputs and resources,
2. processes and practices, and
3. outputs and outcomes.

In Rounds 2 - 4, for the recommended changes in each subcategory, the same three questions are asked.

1. In your opinion, how desirable is this change?
2. In your opinion, how feasible is this change?
3. In your opinion, how probable is this change?

Therefore, in order to keep the response time comfortably brief, the three system elements are dealt with separately.

In beginning each of rounds 2 - 4, the accumulated list of changes will be automatically faxed or mailed to you at the beginning of the week. You have the remainder of that week to enter your responses.

Again, this list is all of the reforms and transformations recommended and suggested by the study participants with additions from the literature of educational reform and futurist literature.

You will be asked to key in the digit that responds to your choice when rating the items in the questionnaire. Please respond to all of the items.

For example:

With regard to the suggestion of eliminating the physical education program from the school system, how would you rate:

1. the desirability?	1	2	3	4
2. the feasibility?	1	2	3	4
3. the probability?	1	2	3	4

Rating scales for Rounds 2-4

D (desirability) 1: very desirable (very important)
2: desirable
3: not desirable
4: highly undesirable

F (feasibility) 1: very feasible (easily done)
2: feasible with some effort
3: not feasible at this time
4: probably impossible

P (probability) 1: very probable
2: maybe
3: not likely
4: probably never

From these ratings, it will become clear that some changes are highly desirable, possibly even highly feasible and probable. Changes which are rated low in all three categories will be eliminated from the study.

Those changes which rank high in desirability with mid-to-high feasibility and probability will be considered changes that could happen.

Those with high desirability but with low feasibility and/or probability will be considered changes that probably won't happen. This is a side issue to be explored in Round 5.

5. By June 18: Round 5

The same process is followed in this final round, but the tasks are different.

You will receive the lists of changes that are high in desirability and medium-to-high in feasibility and probability, i.e., changes that could happen. The same two questions are asked for each change:

1. What is the degree of importance of this change?
2. What is the probable period of occurrence?

You will also receive the lists of changes that are high in desirability but low in feasibility and/or probability, i.e., changes that probably won't happen even if some think they should. The question to be answered is:

3. What is the probable reason for non-occurrence?

Rating Scales for Round 5:

DI (degree of importance)	1:	very high (critical)
	2:	medium
	3:	low (can wait)
PO (period of occurrence)	1:	1993-95 (immediately)
	2:	1995-99 (forseeable future)
	3:	after 2000 (distant future)
RNO (reason for non-occurrence)	1:	economic (financial)
	2:	social (disruptive)
	3:	technical (too difficult)
	4:	political (power struggles)
	5:	other

From this information, it is possible to generate a view of the future state of education in Canada. It is also possible to make some observations about the reasons why some changes seem to be highly desirable but impossible.

Examples of Proposed Changes to Canada's Education System

The purpose of this discussion paper is to stimulate thinking about possibilities and imperatives for change to Canada's education system. In the process of developing this study, four different literature types were reviewed for recommended reforms and transformations to education in general and to the Canadian education system in particular. The following are a sample of ideas from a variety of sources. Clearly, they may overlap or contradict each other; clearly, they are not all encompassing.

The popular press

One body of literature is the public press in which concerned stakeholders voice criticisms, recommend changes and provide brief examples of innovations. The following are a random selection of concerns and changes, one sample from each of the four groups of stakeholders that are evident in the media: parents, educators, leaders in business and industry, and politicians.

1. The Organization for Quality Education, a parent group in Ontario, quoted in Enchin (1993), "wants public schools that reflect the will of parents, a province-wide sequential curriculum for each subject and grade, objective evaluations in each subject area set against provincial, national and international standards, and wide dissemination of information about effective instructional techniques" (p. A6).

2. The Canadian Teachers' Federation (cited in Xerox, 1993), in focusing on the year 2000, foresees:

   - **changes in the teaching force**, eg., the average age is expected to drop in the decade after 2000, it will be more racially diverse, and individuals will have larger instructional repertoires;

   - **changes in instructional modes**, eg., more co-operative or group-directed learning, and more individual learning;

   - **changes in student evaluation**, eg., standardized tests in math and science, and portfolios of high school work;

   - **changes is teacher training**, i.e., teachers are going to go out and work for businesses for a short period of time and bring back those skills to teach their students; and

   - **more work programs**, i.e., more co-operative education programs and the disappearance of vocational programs due to cost and declining enrollments.

3. The editor of The Globe and Mail (Jan.4, 1993), as a major corporate player, states that more money is not needed, but that **a system of national testing** is. This prominent Canadian newspaper recommends a systematic national application of the CSAT (Canadian Scholastic Aptitude Test) devised and administered by the federal government and offered voluntarily to students across Canada.

4. The government in British Columbia conducted a royal commission that recommended the following reforms:

   - a new **focus on the individual**, with changes in curriculum and teaching methods to help students become "active" learners;

   - **a reorganization of the material within the current curriculum to emphasize process, not just content;**

   - the development **non-traditional courses that blend** math and science, or English and history;

   - broader student testing with **self-assessment** encouraged;

   - **a greater voice for parents.**

Government and agency reports

A second body of literature is comprised of current studies and reports commissioned by governments and by large agencies such as the Conference Board of Canada, the Economic Council of Canada, and the Steering Group on Prosperity.

5. The Conference Board of Canada (1992), after an extensive consultation process, has produced what they label an "employability skills profile." The critical skills required of the Canadian workforce fall into academic skills, personal management skills, and teamwork skills. Presumably, they'd like the education system reformed to produce potential workers with these skills.

6. In its 1991 document entitled Learning well...living well, the Prosperity Secretariat recommended the following reforms:
   - committing to national goals and objectives;
   - adopting lifelong learning;
   - linking basic skills to international competitiveness;
   - aiming for excellence and effectiveness in the systems;
   - developing links between education and the private sector;
   - addressing special needs groups to enhance social equity;
   - encouraging efficiency in the total system.

7. The report Inventing our future: An action plan for Canada's prosperity (Prosperity Secretariat, 1992) recommended the creation of "a Canadian forum on learning" to define education goals for the country and promote innovation and partnerships to support excellence in education. It also recommended competency-based systems for all levels of education and training to define the knowledge and skills acquired.

8. The Economic Council of Canada (1992), in a report entitled A lot to learn, listed a number of serious concerns. One recommendation is to increase rewards for the best teachers. The Council recommends stratifying teachers into instructors, career teachers and lead teachers as a way of rewarding effort.

The literature of educational reform

A third source is the literature of educational reform, essentially from within the educational community, for example, Thomas (1991), Fullan (1991), Schlechty (1990), and others. One particularly inclusive example of suggested reforms is the Canadian Restructured School Plan, a project of the Canadian Vocational Association (1992), in which the following shifts in Canadian high school education are recommended:

1. from a system whereby students are admitted to school on an annual or semi-annual basis, to **a more open system with flexible entry and exit**;

2. from a rigid time-bound credit structure to **a flexible competency-based curriculum** in which time is not held constant;

3. from the lock-step graded structure to **a non-graded, continuous progress, individualized approach**;

4. from an instructional mode that is teacher-centered to one that is **learner-centered and teacher-managed**;

5. from an evaluation system which reports student progress in percentages, or letter grades, to one which **reports on the competencies mastered** and the level of mastery reached;

6. from a structure which compares student achievement with others in the group, to **achievement based on one's own progress**;

7. from a physical structure in which most instructional areas are of uniform size to one in which **the facility enables large and small group instruction as well as independent study**;

8. from a student counselling system which is dependent on one or two professional guidance counsellors, to one in which **"home room" teachers assume a major counselling or advisory role**; and

9. from an industrial model with a bureaucratic top down structure to **a professionally-oriented, collegial model** in which teachers are encouraged to function as decision makers.

Futurist literature

A fourth source of potential changes is the literature of the future, such works as those by Toffler (1990), Celente and Milton (1990), King and Schneider (1991), Suzuki (1989), Attali (1991), Drucker (1989), Ferguson (1980) and others that examine broader societal trends and global change.

According to King and Schneider (1991) who write for the Club of Rome, education in the future should involve:

1. acknowledging the most important task to be learning how to learn;
2. dealing with the plethora of knowledge;
3. preventing the anachronism of new knowledge and "old" teachers, teaching what and how they were trained years ago;
4. correcting the impression of unsuitability that young people have about the traditional education they receive;
5. stimulating learning change as an objective of education;
6. giving status and rewards to the teaching profession and improving teacher education;
7. fostering lifelong learning; and
8. developing a multidisciplinary approach because each problem has technical, economic, social, political, and human elements.

Noted futurist Ferguson (1980), in The Aquarian Conspiracy, listed the following necessary transformations to the current education system:

1. from an emphasis on content, acquiring a body of "right" information, once and for all, to an emphasis on learning how to learn and have access to information;
2. from learning as a product, a destination, to learning as a process, a journey;

3. from a hierarchical and authoritarian structure, rewarding conformity and discouraging dissent, to **egalitarian structure where candor and dissent are permitted, and autonomy encouraged**;

4. from a relatively rigid structure and prescribed curriculum, to a relatively **flexible structure and a belief that there are many ways to teach a given subject**;

5. from lockstep progress with emphasis on the "appropriate" ages for certain activities, age segregation and compartmentalization, to **flexibility and integration of age groupings** in which individuals are not automatically limited to certain subject matter by age;

6. from priority on performance, to **priority on self-image as the generator of performance**;

7. from emphasis on the external world where inner experience is often considered inappropriate in the school setting, to **a circumstance where inner experience is seen as a context for learning**, incorporating the use of imagery, storytelling, dream journals and exploration of feelings;

8. from the situation where guessing and divergent thinking are discouraged, to the situation where **guessing and divergent thinking are encouraged as part of the creative process**;

9. from an emphasis on analytical, linear, left-brain thinking, to **whole-brain education which augments left-brain rationality with holistic, nonlinear, and intuitive strategies**;

10. from labeling (eg., remedial, gifted, minimally brain dysfunctional) which contributes to self-fulfilling prophecy, to **labeling used only in minor prescriptive role** and not as a fixed evaluation that dogs the individual's educational career;

11. from concerns with norms to **concern with the individual's performance in terms of potential**, emphasizing an interest in testing outer limits and transcending perceived limitations;

12. from primary reliance on theoretical, abstract "book knowledge," to **theoretical and abstract knowledge heavily complemented by experiment and experience**, both in and out of the classroom; field trips, apprenticeships, demonstrations, visiting experts;

13. from classrooms designed for efficiency and convenience, to **concern for the environment of learning:** lighting, colors, air, physical comfort, needs for privacy and interaction, quiet and exuberant activities;

14. from bureaucratically determined administration, resistant to community input, to **encouraging of community input, even community control**;

15. from education seen as a social necessity for a certain period of time, used to inculcate minimum skills and train for a specific role, to **education seen as a lifelong process, one only tangentially related to schools**;

16. from increasing reliance on technology (audiovisual equipment, computers, tapes, texts) and the resulting dehumanization, to **appropriate technology, with human relationships between teachers and learners of primary importance**; and

17. from the teacher imparting knowledge as a one-way street, to **the teacher as learner, too, learning from students.**

By way of conclusion, another futurist, Toffler, stated as far back as 1980 in The Third Wave:

> in the case of education, the reconceptualization now required is so profound, reaching so far beyond questions of budgets, class size, teacher pay, and the traditional conflicts over curriculum....Our mass education systems are largely obsolete (p. 368).

This leads back to the research question directing this study:

> **What, in your opinion, should be changed about the eduction system in Canada?**

References and Additional Reading

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Appendix 6.2

ROUND 2

PACKAGE OF MATERIALS

FAX TO:_______________________

FAX NO:_______________________

From: Kathryn Chang Barker
403-482-1190 (phone)
403-482-0066 (fax)

A Forecast of Change in the Canadian Education System

(Dissertation study of Kathryn Chang Barker)

Delphi ROUND 2

PREAMBLE:

Thank you for your valuable input in Round 1. I realize that it wasn't easy! Forty seconds simply wasn't long enough for most people; however, it seemed too long if you were waiting for the next voice prompt. Thanks for your patience.

Welcome to those of you entering in Round 2!

ROUND 2 CONTENT:

In the next three rounds, you will be considering lists of proposed changes that are a compilation of:

- what the respondents said in Round 1
- ideas articulated in the media by concerned citizens
- advice for change from government and agency reports
- recommendations found in the literature of educational reform
- suggestions found in futurist literature

Clearly, the lists cannot contain every proposed change. Clearly, the proposed changes may be conflicting.

ROUND 2 is concerned only with inputs and resources in the Canadian education system.

ROUND 3 (May 24-28) will be about process and practices.

ROUND 4 (May 31-June 4) about outputs and outcomes.

PROCESS:

During the week of May 17-21, please:

- judge the items as you read through the Round 2 questionnaire
- call the same number: 1-800-465-1742
- use your PIN number (call me if you've misplaced yours)
- follow the voice prompts

In rounds 2, 3 and 4, you are being asked to judge, for each proposed change, the desirability, feasibility, and probability. This means voting 3 times for each change.

It is necessary to have decided your rating before phoning as you have approximately 15 minutes of telephone time. If you get cut off or have to take a break, you can re-enter the system using the same process and pick up where you left off.

Please register a vote for every idea or suggested change.

RATING SCALES FOR ROUNDS 2-4

D (desirability) 1: very desirable (very important)
2: desirable
3: not desirable
4: highly undesirable

F (feasibility) 1: very feasible (easily done)
2: feasible with some effort
3: not feasible at this time
4: probably impossible

P (probability) 1: very probable
2: maybe
3: not likely
4: probably never

From these ratings, it will become clear that some changes are highly desirable, possibly even highly feasible and probable. Changes which are rated low in all three categories will be eliminated from the study.

Those changes which rank high in desirability with mid-to-high feasibility and probability will be considered changes that could happen.

Those with high desirability but with low feasibility and/or probability will be considered changes that probably won't happen. This is a side issue to be explored in Round 5.

Again, thanks for your considered input!

1. The Inputs and Resources of the System

With regard to each of the following sub-categories of system inputs and resources, the following changes have been recommended. Enter the number of your rating (1-4) in the blank.

11 ENTERING STUDENTS

(eg. readiness, numbers, needs)

111 the growing number of poor children at risk of educational problems has required extensive development of early intervention programs to identify and support these children
Desirability ___ Feasibility ___ Probability ___

112 increasing numbers of students of all ages who do not speak either of Canada's official languages has necessitated the availability of extensive language readiness programs
Desirability ___ Feasibility ___ Probability ___

113 college/university entrants have exemplary literacy skills
Desirability ___ Feasibility ___ Probability ___

114 increasing numbers of students of all ages experience stress from societal problems and access support services
Desirability ___ Feasibility ___ Probability ___

115 increasing numbers of foreign students enroll in all levels of Canadian education
Desirability ___ Feasibility ___ Probability ___

12 PERSONNEL

(eg. paid and volunteer instructional, administrative and support staff: preparation, quality, appropriateness)

121 significant changes in teacher preparation have resulted in teachers with advanced knowledge about effective teaching
Desirability ___ Feasibility ___ Probability ___

122 teachers have acquired advanced technological skills during teacher training and continue to upgrade these skills
Desirability ___ Feasibility ___ Probability ___

123 in their preparation, teachers have experienced more practical work earlier, and have been evaluated at an early stage for attitude and suitability
Desirability ___ Feasibility ___ Probability ___

124 more seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers
Desirability ___ Feasibility ___ Probability ___

125 there are fewer professional teachers and more paraprofessionals in the schools, with teachers viewed as learning managers
Desirability ___ Feasibility ___ Probability ___

126 teachers are highly-credentialled expert resource persons in a system of individualized learning
Desirability ___ Feasibility ___ Probability ___

127 with increased home schooling, teachers serve as coaches of parents and community groups who are backed by technology
Desirability ___ Feasibility ___ Probability ___

13 FINANCES

(eg. amounts, sources, fees)

131 public funding has been reduced, forcing the elimination of all but core academic services
Desirability ___ Feasibility ___ Probability ___

132 a voucher system, which gives the allocation of school finance to customers, allows parents and adult students to choose between competing educational options
Desirability ___ Feasibility ___ Probability ___

133 schools and universities are forced to earn money by attracting more students or providing new services
Desirability ___ Feasibility ___ Probability ___

134 university and college fees have been increased to reflect actual costs
Desirability ___ Feasibility ___ Probability ___

135 significant direct financial contributions are made by business and industry
Desirability ___ Feasibility ___ Probability ___

136 user fees are charged for all extra-curricular activities, eg. sports, music, and other special interests
Desirability ___ Feasibility ___ Probability ___

137 the cost of administration has been significantly reduced through considerable reduction in the size of the administrative structures
Desirability ___ Feasibility ___ Probability ___

138 funding of education through property taxes has ended
Desirability ___ Feasibility ___ Probability ___

139 disparities in financial resources between jurisdictions and provinces have been resolved through an equalization system
Desirability ___ Feasibility ___ Probability ___

140 with a focus on home-based and community-based teaching, the financing of education has gone from highly capital intensive to moderately capital intensive
Desirability ___ Feasibility ___ Probability ___

14 AVAILABIE AND UNUSED RESOURCES

(eg. community)

141 more parents and unemployed persons volunteer as instructional assistants and resource persons
Desirability ___ Feasibility ___ Probability ___

142 the school has extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts
Desirability ___ Feasibility ___ Probability ___

143 peer tutoring is systematized
Desirability ___ Feasibility ___ Probability ___

144 secondary and post-secondary students have mentors drawn from the community
Desirability ___ Feasibility ___ Probability ___

15 PHYSICAL FACILITIES

(eg. classrooms, parking, recreation)

151 uniform-sized, sterile classrooms have been replaced by facilities which enable large and small group instruction as well as independent study
Desirability ___ Feasibility ___ Probability ___

152 learning environments have improved with emphasis on appropriate lighting, colors, air, physical comfort, needs for privacy and interaction, etc.
Desirability ___ Feasibility ___ Probability ___

153 existing community facilities are used as part of the school, eg. libraries, recreation facilities, science laboratories, computer facilities
Desirability ___ Feasibility ___ Probability ___

154 new educational institutions are small, built to ensure a sense of community
Desirability ___ Feasibility ___ Probability ___

155 serious neglect with regard to maintenance of physical facilities has resulted in a deterioration of the quality of facilities
Desirability ___ Feasibility ___ Probability ___

156 catering to all ages, physical structures have changed to accommodate students of mixed ages
Desirability ___ Feasibility ___ Probability ___

157 the increased use of portable microtechnologies, eg. entire dictionaries on videodiscs, and access to electronic data bases has eliminated the traditional library
Desirability ___ Feasibility ___ Probability ___

16 TECHNOLOGICAL EQUIPMENT FOR MANAGEMENT

(eg. adequacy)

161 there is extensive use of computer-managed data transfer and record keeping to track individual students of all ages as they move around provinces and across Canada
Desirability ___ Feasibility ___ Probability ___

162 machines, technologies and processes are current, not dated
Desirability ___ Feasibility ___ Probability ___

163 computers are used to gather better information about student learning and resource utilization for accountability and efficiency purposes
Desirability ___ Feasibility ___ Probability ___

164 individual student learning programs are generated and managed by computers for all students
Desirability ___ Feasibility ___ Probability ___

17 TECHNOLOGICAL EQUIPMENT FOR INSTRUCTION

171 computer-assisted instruction is available for all teachers to use
Desirability ___ Feasibility ___ Probability ___

172 computers and distance learning allow students of all ages to get the basic education they want in their homes or their home communities
Desirability ___ Feasibility ___ Probability ___

173 every student has access to the use of audiovisual technology, CD-ROMs, remote data bases, and computers
Desirability ___ Feasibility ___ Probability ___

174 non-graded, continuous progress schools use technological and audiovisual resources for teaching, i.e., for use by students not teachers
Desirability ___ Feasibility ___ Probability ___

175 computer literacy is taught as a subject, but the acquisition of current computer technology is too expensive to use it as a teaching tool
Desirability ___ Feasibility ___ Probability ___

176 virtual reality technology, used as simulators, reduces the number of professional teachers needed
Desirability ___ Feasibility ___ Probability ___

177 through technology, schools are integrally linked to the outside community, using the media as a teaching resource
Desirability ___ Feasibility ___ Probability ___

18 STUDENT SUPPORT SERVICES

(eg. counselling, health services, child care, financial support)

181 more direct support is available to single mothers to upgrade basic skills
Desirability ___ Feasibility ___ Probability ___

182 all adult Canadians have equitable access to quality adult education and literacy programs
Desirability ___ Feasibility ___ Probability ___

183 more direct support is available to unemployed and underemployed individuals to enter the education system
Desirability ___ Feasibility ___ Probability ___

184 daycare (children and elders) is available in all adult education institutions
Desirability ___ Feasibility ___ Probability ___

185 more extensive support services have been developed because of the effect of social trauma on families
Desirability ___ Feasibility ___ Probability ___

186 schools and post-secondary institutions act as a broker for support services in the community, coordinating not duplicating services to meet the needs of students
Desirability ___ Feasibility ___ Probability ___

187 support services are integrated with the education system, thus dealing holistically with individual students
Desirability ___ Feasibility ___ Probability ___

188 more and better career counselling is available to secondary and adult students
Desirability ___ Feasibility ___ Probability ___

19 STAFF SUPPORT SERVICES

(eg. professional development, teaching assistance, peer support, support services)

191 extensive staff support services are available because of the increasing negative effects of stress
Desirability ___ Feasibility ___ Probability ___

192 professional development activities are more accountable, better organized and skill-oriented
Desirability ___ Feasibility ___ Probability ___

193 increased emphasis is placed on the need to remain current in one's field, and to develop new and different skills
Desirability ___ Feasibility ___ Probability ___

194 a team approach to work has lessened stress on teachers
Desirability ___ Feasibility ___ Probability ___

110 CURRICULUM AND TEACHING MATERIALS

1101 the curriculum is very traditionally academic
Desirability ___ Feasibility ___ Probability ___

1102 a more relevant curriculum has been developed, based on societies' needs and "real life" issues such as conflict resolution, financial management and civic responsibility
Desirability ___ Feasibility ___ Probability ___

1103 math and science offerings have been strengthened
Desirability ___ Feasibility ___ Probability ___

1104 there is an increased emphasis on technical reading and writing skills, with a heavy emphasis on basic literacy
Desirability ___ Feasibility ___ Probability ___

1105 all Canadian children have access to bilingual education
Desirability ___ Feasibility ___ Probability ___

1106 global studies and international education have been incorporated into the curriculum
Desirability ___ Feasibility ___ Probability ___

1107 there is an increased emphasis on the arts
Desirability ___ Feasibility ___ Probability ___

1108 environmental issues are integrated into all aspects of the curriculum
Desirability ___ Feasibility ___ Probability ___

1109 the curriculum is standardized across all the provinces
Desirability ___ Feasibility ___ Probability ___

111 ADMINISTRATIVE STRUCTURE

(eg. local, provincial, national)

1111 a federal/national department of training and education has been established to set standards in education, to define educational goals and to promote innovation
Desirability ___ Feasibility ___ Probability ___

1112 small school boards have been amalgamated
Desirability ___ Feasibility ___ Probability ___

1113 there is provincial coordination rather than local control of postsecondary educational institutions
Desirability ___ Feasibility ___ Probability ___

1114 schools are run on a contract or voucher basis, by many different organizations: teachers, colleges, community organizations
Desirability ___ Feasibility ___ Probability ___

1115 there is site-based management for all institutions
Desirability ___ Feasibility ___ Probability ___

1116 there is community-based management for all institutions
Desirability ___ Feasibility ___ Probability ___

1117 schools have become wholly-owned not-for-profit organizations with community ownership
Desirability ___ Feasibility ___ Probability ___

1118 schools have become completely deregulated, allowing for extensive specialization, variety, and competition
Desirability ___ Feasibility ___ Probability ___

1119 all levels of the education system have been coordinated to ensure that needs of learners and of society are better met
Desirability ___ Feasibility ___ Probability ___

112 STATED GOALS AND PLANS

(eg. for students individually and collectively: local and national goals)

1121 national educational goals and objectives are established
Desirability ___ Feasibility ___ Probability ___

1122 a lifelong learning culture has been systematized
Desirability ___ Feasibility ___ Probability ___

1123 social equity is promoted by addressing the needs of special groups
Desirability ___ Feasibility ___ Probability ___

1124 the fundamental goal of the primary/secondary school system is to develop high levels of functional literacy
Desirability ___ Feasibility ___ Probability ___

1125 national goals that have been developed are related to those of other countries for the sake of international comparison
Desirability ___ Feasibility ___ Probability ___

113 TIME

(eg. semesters, commencement, completion periods)

1131 the school year is longer (more days)
Desirability ___ Feasibility ___ Probability ___

1132 schools are open year-round, with 3 or 4 ongoing semesters
Desirability ___ Feasibility ___ Probability ___

1133 schools never close, eg. shifts of children are followed by shifts of workers retraining, then a nightshift of users of the expensive computer and communications systems
Desirability ___ Feasibility ___ Probability ___

1134 time is irrelevant as all programs are completely modularized and students complete them at their own pace
Desirability ___ Feasibility ___ Probability ___

1135 time is irrelevant as all programs are open-entry/open-exit
Desirability ___ Feasibility ___ Probability ___

1136 all Canadians are expected to continue formal and informal learning, eg. a personalized skills development plan
Desirability ___ Feasibility ___ Probability ___

1137 time is irrelevant as microtechnology has individualized all programs
Desirability ___ Feasibility ___ Probability ___

114 ORGANIZATIONAL CULTURE

(eg. values and norms, interpersonal relationships and communications)

1141 ongoing research and sharing of information about effective instructional techniques within and between schools has been systematized
Desirability ___ Feasibility ___ Probability ___

1142 each school defines and pursues its own mission
Desirability ___ Feasibility ___ Probability ___

1143 parents and students are regarded as customers for whom schools compete
Desirability ___ Feasibility ___ Probability ___

1144 education has been redefined as more than an academic endeavor that takes place in schools
Desirability ___ Feasibility ___ Probability ___

115 INSTITUTIONAL ORGANIZATION

(eg. size, decision-making)

1151 public schools reflect the will of parents through parent-school councils and provincial/national advisory boards
Desirability ___ Feasibility ___ Probability ___

1152 parents and students are directly involved in administration
Desirability ___ Feasibility ___ Probability ___

1153 teachers function as decision-makers in a professionally-oriented, collegial administrative model
Desirability ___ Feasibility ___ Probability ___

1154 the professional bureaucracy within the education system has been reduced in size and authority
Desirability ___ Feasibility ___ Probability ___

1155 schools have been restructured, transformed into something completely different and not simply incrementally modified
Desirability ___ Feasibility ___ Probability ___

Appendix 6.3

ROUND 3

PACKAGE OF MATERIALS

FAX TO:________________________

FAX NO:________________________

From: Kathryn Chang Barker
403-482-1190 (phone)
403-482-0066 (fax)

A Forecast of Change in the Canadian Education System

(Dissertation study of Kathryn Chang Barker)

Delphi ROUND 3

ROUND 3 (May 24-31) is concerned with changes in processes and practices in the Canadian education system.

**** Please note, this is being faxed early because of the long weekend. Please have Round 2 completed by Friday, May 21.**

PROCESS:

As with Round 2, please:

- judge the items as you read through the Round 3 questionnaire
- call the same number: 1-800-465-1742
- use your PIN number (call me if you've misplaced yours)
- follow the voice prompts

Again, you are being asked to judge, for each proposed change, the desirability, feasibility, and probability. This means voting 3 times for each change. Please register a vote for every idea or suggested change. It is necessary to have decided your rating before phoning as you have approximately 15 minutes of telephone time. **If you get cut off or have to take a break, you can re-enter the system using the same process and pick up where you left off.**

RATING SCALES FOR ROUNDS 2-4

D (desirability) 1: very desirable (very important)
2: desirable
3: not desirable
4: highly undesirable

F (feasibility) 1: very feasible (easily done)
2: feasible with some effort
3: not feasible at this time
4: probably impossible

P (probability) 1: very probable
2: maybe
3: not likely
4: probably never

2. The Processes and Practices in the System

With regard to each of the following sub-categories of system processes and practices, the following changes have been recommended. Enter the number of your rating (1-4) in the blank.

21 STUDENT ASSESSMENT

(eg. pre- and post-instruction)

211 all potential students undergo extensive screening processes, including assessment of ability, learning style, and prior learning, to ensure that they enter programs best suited for them
Desirability ___ Feasibility ___ Probability ___

212 objective evaluations in each subject area are set against provincial, national and international standards
Desirability ___ Feasibility ___ Probability ___

213 all students are assessed in a national testing system
Desirability ___ Feasibility ___ Probability ___

214 students are encouraged to assess their own performance, largely through technological means
Desirability ___ Feasibility ___ Probability ___

215 evaluation of each student incorporates portfolio assessment of his/her work
Desirability ___ Feasibility ___ Probability ___

216 student progress at all levels is reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached
Desirability ___ Feasibility ___ Probability ___

217 student achievement is not compared with others but is based on individual progress and individual potential
Desirability ___ Feasibility ___ Probability ___

218 student assessment is done on a functionally-based model which follows the needs determined by the community
Desirability ___ Feasibility ___ Probability ___

219 student assessment includes results beyond those which can be measured with paper and pen
Desirability ___ Feasibility ___ Probability ___

220 the evaluation system has changed from a focus on what learners can't do to what they can do, i.e., from a deficit model to an achievement/mastery model
Desirability ___ Feasibility ___ Probability ___

22 STUDENT RECRUITMENT AND PROGRAM MARKETING

221 special programs for students at risk of dropping out, developed in consultation with those students, have significantly reduced the drop-out rate
Desirability ___ Feasibility ___ Probability ___

222 some programs combine high school and college/university courses
Desirability ___ Feasibility ___ Probability ___

223 marketing is done to enhance the value of vocational education
Desirability ___ Feasibility ___ Probability ___

224 students and/or their guardians have access to a great deal of information about educational options, eg. program success rates, learning approaches, unique features
Desirability ___ Feasibility ___ Probability ___

225 as vouchers for fees are given directly to students who can then compare services, competition for students is fierce between institutions and marketing is a critical activity
Desirability ___ Feasibility ___ Probability ___

23 INSTRUCTIONAL METHODS AND STRATEGIES

231 direct skills instruction dominates as an means of teaching
Desirability ___ Feasibility ___ Probability ___

232 instruction is dominated by co-operative or group-directed learning
Desirability ___ Feasibility ___ Probability ___

233 instruction is a balance between direct instruction and approaches to active learning, eg. group work and simulation
Desirability ___ Feasibility ___ Probability ___

234 most instruction and learning is individualized through microtechnology
Desirability ___ Feasibility ___ Probability ___

235 instruction is learner-centered and teacher-managed rather than teacher-centered
Desirability ___ Feasibility ___ Probability ___

236 the rigid structure and prescribed curriculum has been replaced with a relatively flexible structure and a belief that there are many ways to teach a given subject
Desirability ___ Feasibility ___ Probability ___

237 a rigid structure and prescribed curriculum is in place to ensure that standards are met by all students at various stages
Desirability ___ Feasibility ___ Probability ___

238 guessing and divergent thinking are encouraged as part of the creative process rather than discouraged
Desirability ___ Feasibility ___ Probability ___

239 non-traditional courses blend such traditional courses as math and science, or English and history
Desirability ___ Feasibility ___ Probability ___

24 FORMAL PROGRAM PLANS AND INTENDED OUTCOMES

241 the knowledge and skills to be acquired for all levels of education and training have been defined in a competency-based manner
Desirability ___ Feasibility ___ Probability ___

242 programs plans address a competency profile which describes what a graduate should "look like"
Desirability ___ Feasibility ___ Probability ___

243 secondary schools and universities specialize in programs, eg. science and technology, arts, international baccalaureate, modern languages, international business
Desirability ___ Feasibility ___ Probability ___

244 learning is viewed as a process or journey rather than a product or destination
Desirability ___ Feasibility ___ Probability ___

245 higher standards are expected of all students
Desirability ___ Feasibility ___ Probability ___

246 intended outcomes have been specified very clearly
Desirability ___ Feasibility ___ Probability ___

25 INFORMAL LEARNING OPPORTUNITIES AND RESOURCES

251 experiential learning outside the formal education system is valued and validated
Desirability ___ Feasibility ___ Probability ___

252 the formal system encourages and supports the informal learning systems for culture and recreation
Desirability ___ Feasibility ___ Probability ___

253 through learning contracts, opportunities are made possible for extended work/study in the community
Desirability ___ Feasibility ___ Probability ___

254 theoretical and abstract knowledge is heavily complemented by experiment and experience, both in and out of the classroom
Desirability ___ Feasibility ___ Probability ___

26 SUPPLEMENTAL PROGRAMS

(eg. sports, enrichment, remedial)

261 labelling (eg., remedial, gifted, minimally brain dysfunctional) is used only in a minor prescriptive role and not as a fixed evaluation that endures the individual's educational career
Desirability ___ Feasibility ___ Probability ___

262 students with special needs are fully integrated into the general education system
Desirability ___ Feasibility ___ Probability ___

263 the external community takes responsibility for everything except the intellectual development role of the school and post-secondary institution
Desirability ___ Feasibility ___ Probability ___

264 when remediation or enrichment is advisable, it is available immediately and at the youngest age possible
Desirability ___ Feasibility ___ Probability ___

27 STUDENT LEARNING MANAGEMENT

(eg. individualization, streaming)

271 the system of gradeless education, or program continuity, encourages students to work at their own level of ability instead of meeting specific academic standards
Desirability ___ Feasibility ___ Probability ___

272 secondary schools have been destreamed
Desirability ___ Feasibility ___ Probability ___

273 students operate in an egalitarian structure where candor and dissent are permitted, and autonomy encouraged
Desirability ___ Feasibility ___ Probability ___

274 the system provides flexibility and integration of age groupings so that individuals are not automatically limited to certain subject matter by age
Desirability ___ Feasibility ___ Probability ___

275 individual learning is tracked through a personal lifelong learning record
Desirability ___ Feasibility ___ Probability ___

276 a National Learning Credit Bank encourages portability of acquired credits
Desirability ___ Feasibility ___ Probability ___

277 for management purposes, there is no distinction between full-time and part-time students
Desirability ___ Feasibility ___ Probability ___

278 students and/or their guardians articulate their individual educational needs and plans as these are the basis of entry into the system which has a wide variety of choices
Desirability ___ Feasibility ___ Probability ___

28 LOGISTICS

(eg. class size, class length, semester length)

281 class sizes are smaller
Desirability ___ Feasibility ___ Probability ___

282 classes have been eliminated as students work on individualized programs
Desirability ___ Feasibility ___ Probability ___

283 the academic day, year, facilities and schedule are all flexible
Desirability ___ Feasibility ___ Probability ___

29 STUDENT MANAGEMENT

(eg. discipline, motivation, rewards, counselling, retention)

291 students receive more direct feedback
Desirability ___ Feasibility ___ Probability ___

292 instead of a student counselling system which is dependent on one or two professional guidance counsellors, "home room" teachers assume a major counselling or advisory role
Desirability ___ Feasibility ___ Probability ___

293 extensive career guidance programs, for parents and students, are geared to future employment needs and opportunities
Desirability ___ Feasibility ___ Probability ___

294 secondary students are treated like adult students rather than elementary students in terms of responsibility and choices
Desirability ___ Feasibility ___ Probability ___

295 discipline is stricter with dress codes and behavior standards
Desirability ___ Feasibility ___ Probability ___

210 STAFF MANAGEMENT

(eg. evaluation, incentives, recognition, career paths, retention)

2101 there are rewards for excellent teachers
Desirability ___ Feasibility ___ Probability ___

2102 teachers are stratified into instructors, career teachers and lead teachers as a way of rewarding effort
Desirability ___ Feasibility ___ Probability ___

2103 teachers are forced to upgrade in order to prevent the anachronism of new knowledge and "old" teachers, teaching what and how they were trained years ago
Desirability ___ Feasibility ___ Probability ___

2104 increased status and rewards have been allotted to the teaching profession
Desirability ___ Feasibility ___ Probability ___

2105 the personnel system provides rewards for success with students and real consequences for failure
Desirability ___ Feasibility ___ Probability ___

2106 few teachers are unionized, now working for schools which offer competitive salaries and working conditions
Desirability ___ Feasibility ___ Probability ___

2107 all aspects of staff management change as teachers become co-owners of the schools with the parents
Desirability ___ Feasibility ___ Probability ___

2108 the results of student assessment are used to evaluate the effectiveness of teachers
Desirability ___ Feasibility ___ Probability ___

211 ADMINISTRATIVE BEHAVIOR

(eg. teacher supervision, community interaction, learner involvement, planning, responsiveness)

2111 administration encourages community input, even community control of some aspects
Desirability ___ Feasibility ___ Probability ___

2112 much administrative work is done by non-educators
Desirability ___ Feasibility ___ Probability ___

2113 administration is restructured to incorporate the distinction between educational leaders and school managers
Desirability ___ Feasibility ___ Probability ___

2114 administration includes monitoring a proper system for assessing innovations under controlled conditions by independent evaluators
Desirability ___ Feasibility ___ Probability ___

212 INVOLVEMENT WITH COMMUNITY

(eg. parents and business)

2121 business in greatly involved in education, directly with funding and indirectly with program support
Desirability ___ Feasibility ___ Probability ___

2122 a curriculum policy advisory board with representatives from parents, business, labor, trustees, post-secondary education, and teachers regularly modifies the curriculum
Desirability ___ Feasibility ___ Probability ___

2123 all students have access to work programs, i.e., more co-operative education programs
Desirability ___ Feasibility ___ Probability ___

2124 schools seek to prevent problems rather than trying to remediate failure, working with parents and the community to solve larger problems
Desirability ___ Feasibility ___ Probability ___

2125 parents and the business community define the results they expect from the educational institutions in their community
Desirability ___ Feasibility ___ Probability ___

2126 community involvement is managed and coordinated by the schools
Desirability ___ Feasibility ___ Probability ___

2127 the community and the educational institutions are fully integrated so that institutions don't exist in isolation
Desirability ___ Feasibility ___ Probability ___

213 LINKS TO OTHER PROGRAMS AND SERVICES

2131 with a significant reduction in the expectations placed on schools, schools focus on academics, leaving other social programs and services to meet non-academic needs
Desirability ___ Feasibility ___ Probability ___

2132 the education system deals holistically with each individual student, participating in a network of programs and services to ensure that learning is maximized
Desirability ___ Feasibility ___ Probability ___

2133 whole families become involved in the education opportunities offered to employees by business and industry
Desirability ___ Feasibility ___ Probability ___

214 PROGRAM EVALUATION, DEVELOPMENT AND ACCOUNTABILITY

2141 at every level, there is accountability through testing
Desirability ___ Feasibility ___ Probability ___

2142 excellence, effectiveness and efficiency have been defined for all levels of the system
Desirability ___ Feasibility ___ Probability ___

2143 accountability focuses on results rather than on compliance with rules and regulations
Desirability ___ Feasibility ___ Probability ___

2144 the government measures and publicizes many different kinds of results, eg. test scores, student satisfaction surveys, dropout rates, that the consumer uses to make choices in schools
Desirability ___ Feasibility ___ Probability ___

2145 curricula are evaluated regularly for relevance to international society
Desirability ___ Feasibility ___ Probability ___

215 INTERACTION WITH THE EXTERNAL ENVIRONMENT

(eg. leadership, future orientation, responsiveness to government and to societal stresses)

2151 the education system accepts responsibility for promoting positive proactive change rather than maintenance of the status quo
Desirability ___ Feasibility ___ Probability ___

2152 the education system is guided by a national vision of a better future for all Canadians
Desirability ___ Feasibility ___ Probability ___

2153 economic and education priorities have been integrated at the local, provincial and national levels
Desirability ___ Feasibility ___ Probability ___

2154 the critical relationship between quality of education and quality of life is recognized in the priority status of education in terms of resource allocation and political attention
Desirability ___ Feasibility ___ Probability ___

2155 all educational institutions support and demonstrate educational entrepreneurialism, eg. innovative and responsive programs such as "women in science awareness program"
Desirability ___ Feasibility ___ Probability ___

2156 the education system is integrally linked with the media as a learning resource
Desirability ___ Feasibility ___ Probability ___

2157 all levels of the system are actively involved in environmental preservation
Desirability ___ Feasibility ___ Probability ___

2158 external linkages are limited in order that the individual student adopts the attitude of control over one's own life
Desirability ___ Feasibility ___ Probability ___

2159 extensive coordination exists between the variety of teaching/learning agencies in society
Desirability ___ Feasibility ___ Probability ___

2160 there is more and different vocational training, with improved access to vocational and technical education
Desirability ___ Feasibility ___ Probability ___

Appendix 6.4

ROUND 4

PACKAGE OF MATERIALS

FAX TO:__________________________

FAX NO:__________________________

From: Kathryn Chang Barker
403-482-1190 (phone)
403-482-0066 (fax)

A Forecast of Change in the Canadian Education System

(Dissertation study of Kathryn Chang Barker)

Delphi ROUND 4

ROUND 4 (May 31 - June 4) concerned with changes in outputs and outcomes of the Canadian education system.

PROCESS:

As with Round 2, please:

- judge the items as you read through the Round 3 questionnaire
- call the same number: 1-800-465-1742
- use your PIN number (call me if you've misplaced yours)
- follow the voice prompts

Again, you are being asked to judge, for each proposed change, the desirability, feasibility, and probability. This means voting 3 times for each change. Please register a vote for every idea or suggested change. It is necessary to have decided your rating before phoning as you have approximately 15 minutes of telephone time. **If you get cut off or have to take a break, you can re-enter the system using the same process and pick up where you left off.**

RATING SCALES FOR ROUNDS 2-4

D (desirability) 1: very desirable (very important)
2: desirable
3: not desirable
4: highly undesirable

F (feasibility) 1: very feasible (easily done)
2: feasible with some effort
3: not feasible at this time
4: probably impossible

P (probability) 1: very probable
2: maybe
3: not likely
4: probably never

YOUR TIME AND EFFORT IS GENUINELY APPRECIATED!!!

3. System Outputs or Outcomes

With regard to each of the following sub-categories of system processes and practices, the following changes have been recommended. Enter the number of your rating (1-4) in the blank.

31 INDIVIDUAL STUDENTS

(eg. achievements, changes, attitudes, skills)

311 students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career
Desirability ___ Feasibility ___ Probability ___

312 students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities
Desirability ___ Feasibility ___ Probability ___

313 students no longer focus on content, i.e., acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information
Desirability ___ Feasibility ___ Probability ___

314 students develop strategies for dealing with the over-supply of knowledge
Desirability ___ Feasibility ___ Probability ___

315 students acquire the attitude that change is unavoidable and therefore anticipation, planning and choice are important
Desirability ___ Feasibility ___ Probability ___

316 students learn that education is a lifelong process, one only tangentially related to schools
Desirability ___ Feasibility ___ Probability ___

317 self-education has become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity
Desirability ___ Feasibility ___ Probability ___

318 all graduates demonstrate high levels of various types of literacy, i.e., cultural, computer, science, sex, health, media and international literacy
Desirability ___ Feasibility ___ Probability ___

319 all students exhibit a high degree of basic literacy and numeracy, i.e., reading, writing, communication skills, computation skills and logic
Desirability ___ Feasibility ___ Probability ___

320 students develop a sense of responsibility and accountability for their actions through opportunities to make creative decisions
Desirability ___ Feasibility ___ Probability ___

32 STUDENTS COLLECTIVELY

(eg. opportunities, responsibilities)

321 there is a shift in our understanding of ourselves as separate individuals, each seeking our own welfare, to an understanding of how we fit collectively into social, biological and physical environments
Desirability ___ Feasibility ___ Probability ___

322 students have become consumers, examining the opportunities and making informed choices
Desirability ___ Feasibility ___ Probability ___

323 students have accepted the responsibility to become involved in program development and decision-making
Desirability ___ Feasibility ___ Probability ___

324 all citizens realize that, given the options and imperatives for learning, they should systematically access programs
Desirability ___ Feasibility ___ Probability ___

325 learners realize that there are no categorical divisions in society, the global economy, the environment, leading to new worldviews that are without environmental exploitation
Desirability ___ Feasibility ___ Probability ___

326 the result of increased self-education and awareness of the growing interdependencies of economies, communities, environments and communications provides the opportunity to pursue several different careers at once
Desirability ___ Feasibility ___ Probability ___

327 students respect the basic human values of tolerance, compassion and honesty while displaying technical expertise and creative thinking
Desirability ___ Feasibility ___ Probability ___

328 students through the formal education system become adept at functioning fully in society, acquiring practical work and life skills
Desirability ___ Feasibility ___ Probability ___

329 graduates have the employability skills to succeed in an increasingly competitive world
Desirability ___ Feasibility ___ Probability ___

33 LOCAL COMMUNITY

331 each community in Canada has a range of educational services, with equitable access to quality programs for its community members
Desirability ___ Feasibility ___ Probability ___

332 the education system becomes a contributing community member, assessing and providing for local learning and training needs of all citizens
Desirability ___ Feasibility ___ Probability ___

333 communities develop plans and solve problems in conjuntion with the education system in its capacity to conduct research and provide manpower
Desirability ___ Feasibility ___ Probability ___

334 community members, empowered through lifelong learning, are actively involved in local political, economic, social and educational institutions
Desirability ___ Feasibility ___ Probability ___

34 CANADIAN SOCIETY

(eg. short-term, long-term)

341 there is a common understanding of the intended products of the education system in Canada
Desirability ___ Feasibility ___ Probability ___

342 through increasing human-rights education, Canada is building a tolerant, equitable, and just society
Desirability ___ Feasibility ___ Probability ___

343 education has become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity
Desirability ___ Feasibility ___ Probability ___

344 the critical role of the public school as an equalizer in Canadian society has been retained, as it has maintained a competitive advantage with private schools
Desirability ___ Feasibility ___ Probability ___

345 products of the formal education system, i.e., graduates, have strong basic literacy skills, the capacity to work together, and a will to continue to learn
Desirability ___ Feasibility ___ Probability ___

346 citizens involved in the education system have learned that each societal problem has technical, economic, social, political, and human elements, and are prepared to work constructively toward solutions
Desirability ___ Feasibility ___ Probability ___

347 an industry of knowledge creation and marketing has developed in the post-secondary education sector which contributes substantially to Canada's economic success
Desirability ___ Feasibility ___ Probability ___

35 EMPLOYERS

351 employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills
Desirability ___ Feasibility ___ Probability ___

352 a standard test for entry-level job applicants assesses both their academic skills and personality traits and serves as a success indicator for the educational system
Desirability ___ Feasibility ___ Probability ___

353 new critical skills that emerge are integrated into the curriculum of the pre-employment institutions
Desirability ___ Feasibility ___ Probability ___

354 training and education budgets are high as corporations stretch for new results through human resource development
Desirability ___ Feasibility ___ Probability ___

355 corporations reach deeply into the educational system to influence the quality of its supply of workers
Desirability ___ Feasibility ___ Probability ___

356 industry in each community has become a partner in the shift from primary reliance on theoretical, abstract "book knowledge," to theoretical knowledge heavily complemented by experiment and experience, both in and out of the classroom
Desirability ___ Feasibility ___ Probability ___

36 TEACHERS, SUPPORT STAFF AND VOLUNTEERS

361 despite increasing reliance on technology and the potential dehumanization, human relationships between teachers and learners are of primary importance
Desirability ___ Feasibility ___ Probability ___

362 staff in the education system experience intense job satisfaction and feel appreciated and respected
Desirability ___ Feasibility ___ Probability ___

363 staff model lifelong learning and leadership responsibility
Desirability ___ Feasibility ___ Probability ___

364 the approach has shifted from the teacher imparting knowledge as a one-way street to the teacher as learner, too, learning from students
Desirability ___ Feasibility ___ Probability ___

37 ADMINISTRATORS AND INSTITUTIONS

371 institutions have a clear mandate and resources with which to adequately address it in an ongoing manner and are, therefore, able to demonstrate accountability in a variety of ways
Desirability ___ Feasibility ___ Probability ___

372 institutions are linked in productive ways to other social and economic institutions to maximize service to individuals and to Canadian society
Desirability ___ Feasibility ___ Probability ___

38 GOVERNMENT DEPARTMENTS, FUNDERS AND POLICY MAKERS

381 the issues of education, training and retraining are dealt with in an interdepartmental fashion with a coordinating council at the federal level
Desirability ___ Feasibility ___ Probability ___

382 adult training and retraining are embedded in various social programs, eg. re-training is a prerequisite for UI benefits
Desirability ___ Feasibility ___ Probability ___

383 a federal government agency coordinates the systematic development of education and training for all citizens, reducing the need for ten very similar and very large provincial bureaucracies
Desirability ___ Feasibility ___ Probability ___

384 Canadian educational achievement compares favorably in the international arena
Desirability ___ Feasibility ___ Probability ___

385 through the education system, contemporary problems are introduced and researched so that citizens are aware and involved in governance issues
Desirability ___ Feasibility ___ Probability ___

Appendix 6.5

ROUND 5

PACKAGE OF MATERIALS

FAX TO:________________________

FAX NO:________________________

From: Kathryn Chang Barker
403-482-1190 (phone)
403-482-0066 (fax)

A Forecast of Change in the Canadian Education System
(Dissertation study of Kathryn Chang Barker)

PHASE 2 (Delphi Round 5)

In Phase 2 of this study, the last round, a larger number of respondents will be participating, some for the first time. The data that is being gathered is personal opinion.

As a study participant, please understand that your responses will be confidential but that the study findings will be made public. Your PIN is:

BACKGROUND TO PHASE 2:

This study is a forecast of change to/in the Canadian education system. Briefly, change is being demanded by individual consumers, by groups of concerned citizens, by business and industry, and by general societal changes. An extensive list of potential changes, i.e., 232 reforms and transformations, was generated through analysis of media reports, the academic literature of educational reform, studies and reports of national agencies, futurist literature on societal change, and informed input from individuals in Phase 1 of the study. This list was by no means intended to be all-inclusive. In addition, some potential changes were clearly contradicted by others.

In Phase 1 (Delphi rounds 1-4), each potential change was judged, by a panel of informed respondents, for desirability, feasibility and probability. Subsequently, the changes were divided, according to the opinion of the respondents, into five major categories:

1. changes with high desirability, feasibility and probability, i.e., **changes that should and would probably come about**;
2. changes with high desirability and feasibility but low probability, i.e., **changes that should and could happen but probably wouldn't**;
3. changes with high desirability but low feasibility and low probability, i.e., **good ideas that seem too difficult to be probable**;

4. changes with low desirability and mid feasibility but high probability, i.e., **changes that shouldn't happen but probably would;**

5. changes with low desirability, feasibility and desirability, i.e., **bad ideas.**

Phase 2 will focus on categories 1-3 above. If you are interested, categories 4-5 will be described in the final report which will be made available to you.

PROCESS:

On or before JULY 15, please:

- judge / rate the items as you read through the questionnaire
- call the study number: 1-800-465-1742
- use your PIN number (call me if you've misplaced yours)
- follow the voice prompts

It is important to have decided your rating before phoning as you have approximately 15 minutes of telephone time. If you get cut off or have to take a break, you can re-enter the system using the same process and pick up where you left off.

Please register a vote for every idea or suggested change. For Phase 2.1, you will vote twice for each item; for Phase 2.2, only once.

Thank you for your participation!

RATING SCALES FOR PHASE 2.1:

A. **period of occurrence of the change**

1. before year 2000
2. after year 2000
3. probably never

B. the **necessary catalyst** that would/could initiate this change:

1. organized / increased pressure from students and parents
2. direct involvement of employers and businesses
3. significant societal disruption, eg., environmental, economic, political, or natural disaster
4. changed provincial government priorities and programs
5. community partnerships bringing new / more resources
6. federal government intervention and national planning
7. pressure from teachers and administrators
8. other / none of the above

PHASE 2.1

The following changes to the Canadian education system have been judged to be desirable, feasible and probable. For each item, please choose the number that coincides with your opinion about both period of occurrence of the change and the necessary catalyst that could/would initiate the change.

Regarding education and training within Canadian society:

101 education has been redefined as more than an academic endeavor that takes place in schools, and extensive coordination exists between the variety of teaching/learning agencies in society
occurrence (1-3) ___ catalyst (1-8) ___

102 education has become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity
occurrence (1-3) ___ catalyst (1-8) ___

103 a lifelong learning culture has been adopted and systematized, i.e., self-directed education has become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity
occurrence (1-3) ___ catalyst (1-8) ___

104 all Canadians are expected to continue formal and informal learning, eg. through a personalized skills development plan, and computer-managed record keeping tracks individual students of all ages as they move around provinces and across Canada
occurrence (1-3) ___ catalyst (1-8) ___

105 national educational goals, objectives and standards have been established
occurrence (1-3) ___ catalyst (1-8) ___

106 excellence, effectiveness and efficiency have been defined for all levels of the system, and accountability focuses on results rather than on compliance with rules and regulations
occurrence (1-3) ___ catalyst (1-8) ___

107 an industry of knowledge creation and marketing has developed in the post-secondary education sector which contributes substantially to Canada's economic success
occurrence (1-3) ___ catalyst (1-8) ___

108 increased status and rewards have been allotted to the teaching profession
occurrence (1-3) ___ catalyst (1-8) ___

With regard to increasing social problems and the special needs of individual Canadians:

109 the growing number of poor children at risk of educational problems has required extensive development of early intervention programs to identify and support these children
occurrence (1-3) ___ catalyst (1-8) ___

110 increasing numbers of students of all ages who do not speak either of Canada's official languages has necessitated the availability of extensive language readiness programs
occurrence (1-3) ___ catalyst (1-8) ___

111 increasing numbers of students of all ages experience stress from societal problems and the education system deals holistically with each individual, participating in a network of programs and services to ensure that learning is maximized
occurrence (1-3) ___ catalyst (1-8) ___

112 social equity is promoted by addressing the needs of special groups, and the critical role of the public school as an equalizer in Canadian society has been retained
occurrence (1-3) ___ catalyst (1-8) ___

113 special programs for students at risk of dropping out, developed in consultation with those students, have significantly reduced the drop-out rate
occurrence (1-3) ___ catalyst (1-8) ___

114 more direct support is available to single mothers to upgrade basic skills, and to unemployed and underemployed individuals to enter the education system
occurrence (1-3) ___ catalyst (1-8) ___

115 all Canadians have access to quality basic education programs in their home communities
occurrence (1-3) ___ catalyst (1-8) ___

116 disparities in financial resources between jurisdictions and provinces have been resolved through an equalization system
occurrence (1-3) ___ catalyst (1-8) ___

Within the local community:

117 the school has extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts, and student mentors drawn from the community
occurrence (1-3) ___ catalyst (1-8) ___

118 through learning contracts, opportunities are made possible for extended work / study in the community, and all students have access to co-operative education programs
occurrence (1-3) ___ catalyst (1-8) ___

119 secondary schools and universities specialize in programs, eg. science and technology, arts, international baccalaureate, modern languages, international business
occurrence (1-3) ___ catalyst (1-8) ___

120 schools and post-secondary institutions act as a broker for support services in the community, coordinating not duplicating services to meet the needs of students and seeking to prevent problems rather than trying to remediate them
occurrence (1-3) ___ catalyst (1-8) ___

121 students and/or their guardians have access to a great deal of information about educational options, eg. program success rates, learning approaches, unique features
occurrence (1-3) ___ catalyst (1-8) ___

122 all levels of the education system are actively involved in environmental preservation
occurrence (1-3) ___ catalyst (1-8) ___

123 the education system is integrally linked with the media as a learning resource
occurrence (1-3) ___ catalyst (1-8) ___

Within schools and universities:

124 uniform-sized, sterile classrooms have been replaced by facilities which enable large and small group instruction as well as independent study
occurrence (1-3) ___ catalyst (1-8) ___

125 there is more and different vocational training, with improved access to vocational and technical education and increased marketing to enhance its value
occurrence (1-3) ___ catalyst (1-8) ___

126 all educational institutions support and demonstrate educational entrepreneurialism, eg. innovative and responsive programs such as "women in science awareness program"
occurrence (1-3) ___ catalyst (1-8) ___

127 schools and universities "earn" extra income by attracting more students and/or providing new services
occurrence (1-3) ___ catalyst (1-8) ___

128 a team approach to work has lessened stress on teachers
occurrence (1-3) ___ catalyst (1-8) ___

Administratively speaking:

129 schools are open year-round, with 3 or 4 ongoing semesters, and the academic day, year, facilities and schedule are all flexible
occurrence (1-3) ___ catalyst (1-8) ___

130 institutions never close, eg. shifts of regular students are followed by shifts of workers retraining, then a nightshift of users of the expensive computer and communications systems
occurrence (1-3) ___ catalyst (1-8) ___

131 much administrative work is done by non-educators
occurrence (1-3) ___ catalyst (1-8) ___

132 secondary students are treated like adult students rather than elementary students in terms of responsibility and choices
occurrence (1-3) ___ catalyst (1-8) ___

With regard to student assessment, teaching and learning:

133 the evaluation system has changed from a focus on what learners can't do to what they can do, i.e., from a deficit model to an achievement/mastery model
occurrence (1-3) ___ catalyst (1-8) ___

134 the knowledge and skills to be acquired for all levels of education and training have been defined in a competency-based manner
occurrence (1-3) ___ catalyst (1-8) ___

135 evaluation of each student incorporates portfolio assessment of his/her work and student assessment includes results beyond those which can be measured with paper and pen
occurrence (1-3) ___ catalyst (1-8) ___

136 direct skills instruction dominates as an means of teaching
occurrence (1-3) ___ catalyst (1-8) ___

137 instruction is a balance between direct instruction and approaches to active learning, eg. group work and simulation
occurrence (1-3) ___ catalyst (1-8) ___

138 instruction is learner-centered and teacher-managed rather than teacher-centered
occurrence (1-3) ___ catalyst (1-8) ___

139 the rigid structure and prescribed curriculum has been replaced with a relatively flexible structure, for example, non-traditional courses blend such traditional courses as math and science, or English and history
occurrence (1-3) ___ catalyst (1-8) ___

140 global studies, international education and environmental education have been incorporated into the curriculum
occurrence (1-3) ___ catalyst (1-8) ___

141 theoretical and abstract knowledge is heavily complemented by experiment and experience, both in and out of the classroom, and experiential learning outside the formal education system is valued and validated
occurrence (1-3) ___ catalyst (1-8) ___

142 math and science offerings have been strengthened
occurrence (1-3) ___ catalyst (1-8) ___

As a result of completing secondary education:

143 students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career
occurrence (1-3) ___ catalyst (1-8) ___

144 students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities
occurrence (1-3) ___ catalyst (1-8) ___

145 students, through the formal education system, become adept at functioning fully in society, acquiring practical work, life and citizenship skills
occurrence (1-3) ___ catalyst (1-8) ___

146 all students exhibit a high degree of basic literacy and numeracy, i.e., reading, writing, communication skills, computation skills and logic
occurrence (1-3) ___ catalyst (1-8) ___

147 students acquire the attitude that change is unavoidable and therefore that anticipation, planning and choice are important
occurrence (1-3) ___ catalyst (1-8) ___

Regarding the relationship between the formal education system and paid employment in Canadian society:

148 new critical skills that emerge are integrated into the curriculum of the pre-employment institutions
occurrence (1-3) ___ catalyst (1-8) ___

149 extensive career guidance programs, for parents and students, are geared to future employment needs and opportunities
occurrence (1-3) ___ catalyst (1-8) ___

150 employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills
occurrence (1-3) ___ catalyst (1-8) ___

With regard to the initial and ongoing training of educators:

151 significant changes in teacher preparation have resulted in teachers with advanced knowledge about learning and effective teaching
occurrence (1-3) ___ catalyst (1-8) ___

152 in their preparation, teachers have experienced more practical work earlier, and have been evaluated at an early stage for attitude and suitability
occurrence (1-3) ___ catalyst (1-8) ___

153 increased emphasis is placed on the need to remain current in one's field, and to develop new and different skills
occurrence (1-3) ___ catalyst (1-8) ___

PHASE 2.2

In Phase 2.2, your opinion is being sought about the changes that have been judged to be desirable, possibly feasible, but improbable.

If these changes have been judged to be positive, then it would seem that some primary obstacle prevents them from being feasible and/or probable.

For each item, please choose the number that coincides with your opinion about the primary obstacle or reason for non-occurrence

1. economic (financial considerations)
2. social (disruptive consequences)
3. technical (too difficult)
4. political (power struggles)
5. other
6. no obstacle (this change is desirable, feasible, probable)

201 The critical relationship between quality of education and quality of life is evident by the priority status of education in terms of resource allocation and political attention.
primary obstacle (1-6) ___

202 The education system accepts responsibility for promoting positive proactive change rather than maintenance of the status quo.
primary obstacle (1-6) ___

203 The education system is guided by a national vision of a better future for all Canadians.
primary obstacle (1-6) ___

204 At the national level the issues of education, training and retraining are dealt with in an interdepartmental fashion with a coordinating council.
primary obstacle (1-6) ___

205 A federal/national department of training and education has been established to set standards in education, to define educational goals and to promote innovation.
primary obstacle (1-6) ___

206 Schools have become completely deregulated, allowing for extensive specialization, variety, and competition.
primary obstacle (1-6) ___

207 A voucher system, which gives the allocation of school finance to customers, allows parents and adult students to choose between competing educational options.
primary obstacle (1-6) ___

208 Schools are run on a contract or voucher basis, by many different organizations: teachers, colleges, community organizations.
primary obstacle (1-6) ___

209 The government measures and publicizes many different kinds of results, eg. test scores, student satisfaction surveys, dropout rates, that the consumer uses to make choices in schools.
primary obstacle (1-6) ___

210 Objective evaluations in each subject area are set against provincial, national and international standards and all students are assessed in a national testing system.
primary obstacle (1-6) ___

211 Students have become consumers, examining the opportunities and making informed choices.
primary obstacle (1-6) ___

212 All potential students undergo extensive screening processes, including assessment of ability, learning style, and prior learning, to ensure that they enter programs best suited for them.
primary obstacle (1-6) ___

213 The system provides flexibility and integration of age groupings so that individuals are not automatically limited to certain subject matter by age.
primary obstacle (1-6) ___

214 The system of gradeless education, or program continuity, encourages students to work at their own level of ability instead of meeting specific academic standards.
primary obstacle (1-6) ___

215 Time is irrelevant as all programs are completely modularized so that students can complete them at their own pace and because programs are open-entry/open-exit for all.
primary obstacle (1-6) ___

216 Students no longer focus on content, i.e., acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information.
primary obstacle (1-6) ___

217 The curriculum is evaluated regularly for relevance to international society.
primary obstacle (1-6) ___

218 There is an increased emphasis on the arts.
primary obstacle (1-6) ___

219 All Canadian children have access to bilingual education.
primary obstacle (1-6) ___

220 Every school and every student has access to the use of audiovisual technology, CD-ROMs, remote data bases, and computers.
primary obstacle (1-6) ___

221 Most instruction and learning is individualized through microtechnology.
primary obstacle (1-6) ___

222 Students are encouraged to assess their own performance, largely through technological means.
primary obstacle (1-6) ___

223 Student progress at all levels is reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached.
primary obstacle (1-6) ___

224 Student achievement is not compared with others but is based on individual progress and individual potential.
primary obstacle (1-6) ___

225 Teachers have acquired advanced technological skills during teacher training and have opportunities to maintain enhanced skills.
primary obstacle (1-6) ___

226 More seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers.
primary obstacle (1-6) ___

227 There are fewer professional teachers and more paraprofessionals in the schools, with teachers viewed as learning managers.
primary obstacle (1-6) ___

228 The personnel system provides rewards for success with students and real consequences for failure, and the results of student assessment are used to evaluate the effectiveness of teachers.
primary obstacle (1-6) ___

229 The external community takes responsibility for everything except the intellectual development role of the school and post-secondary institution.
primary obstacle (1-6) ___

230 Existing community facilities are used as part of the school, eg. libraries, recreation facilities, science laboratories, computer facilities.
primary obstacle (1-6) ___

331 Communities develop plans and solve problems in conjuntion with the education system with its capacity to conduct research and provide human resources, professional and student.
primary obstacle (1-6) ___

232 Administration encourages community input, even community control of some aspects.
primary obstacle (1-6) ___

233 Administration is restructured to incorporate the distinction between educational leaders and school managers.
primary obstacle (1-6) ___

234 Administration includes monitoring a proper system for assessing innovations under controlled conditions by independent evaluators.
primary obstacle (1-6) ___

235 The cost of administration has been significantly reduced through considerable reduction in the size of the administrative structures.
primary obstacle (1-6) ___

236 There is provincial coordination rather than local control of postsecondary educational institutions.
primary obstacle (1-6) ___

237 There is site-based management for all institutions.
primary obstacle (1-6) ___

238 Catering to all ages, physical structures have changed to accommodate students of mixed ages.
primary obstacle (1-6) ___

239 Daycare (children and elders) is available in all adult education institutions.
primary obstacle (1-6) ___

240 Corporations reach deeper into the educational system to influence the quality of its supply of workers.
primary obstacle (1-6) ___

Appendix 7.1

ROUND 2 DATA

Round 2 Data

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
111	9	1	0	0	1	9	0	0	1	6	3	0	the growing number of poor children at risk of educational problems has required extensive development of early intervention programs to identify and support these children
112	7	2	1	0	2	7	1	0	0	6	4	0	increasing numbers of students of all ages who do not speak either of Canada's official languages has necessitated the availability of extensive language readiness programs
113	7	2	1	0	4	5	0	1	3	3	3	1	college and university entrants demonstrate exemplary basic literacy skills
114	4	4	0	2	3	5	1	1	1	4	3	2	increasing numbers of students of all ages experience stress from societal problems and access a variety of support services
115	1	6	2	1	4	3	3	0	2	3	3	2	increasing numbers of foreign students enroll in all levels of Canadian education
121	8	1	1	0	4	5	1	0	2	6	2	0	significant changes in teacher preparation have resulted in teachers with advanced knowledge about learning and effective teaching
122	4	5	1	0	1	7	2	0	0	4	5	1	teachers have acquired advanced technological skills during teacher training and have opportunities to maintain enhanced skills
123	8	1	0	1	6	1	3	0	3	5	1	1	in their preparation, teachers have experienced more practical work earlier, and have been evaluated at an early stage for attitude and suitability

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
124	4	6	0	0	4	6	0	0	1	3	5	1	more seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers
125	5	0	2	3	2	3	5	0	0	3	4	3	there are fewer professional teachers and more paraprofessionals in the schools, with teachers viewed as learning managers
26	3	2	4	1	0	3	5	2	0	1	6	3	teachers are highly-credentialled expert resource persons in a system of individualized learning
127	1	2	4	3	0	7	1	2	0	2	4	4	with increased home schooling, teachers serve as coaches of parents and community groups who are backed by technology
131	0	2	2	6	4	4	2	0	1	6	2	1	public funding has been reduced, forcing the elimination of all but core academic services
132	1	4	0	4	0	6	2	1	0	1	5	3	a voucher system, which gives the allocation of school finance to customers, allows parents and adult students to choose between competing educational options
133	1	4	3	1	1	5	3	0	1	6	1	1	schools and universities are forced to earn money by attracting more students or providing new services
134	1	5	2	1	2	5	2	0	1	5	3	0	university and college fees have been increased to reflect actual costs
135	2	1	5	1	2	3	4	0	1	5	3	0	significant direct financial contributions are made by business and industry

Item #	Desirability				Feasibility				Probability			
	1	2	3	4	1	2	3	4	1	2	3	4
	high		low		high		low		high		low	
136 user fees are charged for all extra-curricular activities, eg. sports, music, and other special interests	2	2	3	2	2	5	2	0	2	4	3	0
137 the cost of administration has been significantly reduced through considerable reduction in the size of the administrative structures	5	3	0	1	1	6	2	0	1	3	4	1
138 the system of funding education through property taxes has been eliminated	3	1	2	3	2	3	2	2	0	3	2	4
139 disparities in financial resources between jurisdictions and provinces have been resolved through an equalization system	6	2	0	1	2	4	3	0	1	4	4	0
140 with a focus on home-based and community-based teaching, the financing of education has gone from highly capital intensive to moderately capital intensive	0	6	2	1	0	5	4	0	0	4	5	0
141 more parents and unemployed persons volunteer as instructional assistants and resource persons	2	5	2	0	1	5	3	0	1	2	6	0
142 the school has extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts	6	2	0	1	3	5	0	1	3	4	1	1
143 peer tutoring is systematized	3	4	1	1	1	7	0	1	0	6	3	0
144 secondary and post-secondary students have mentors drawn from the community	5	3	0	1	1	7	1	0	1	4	3	1

Item #	**Desirability**				**Feasibility**				**Probability**				
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	
	high		low		high		low		high		low		
151	6	1	2	0	2	3	4	0	1	4	4	0	uniform-sized, sterile classrooms have been replaced by facilities which enable large and small group instruction as well as independent study
152	4	3	0	2	1	3	5	0	2	4	3	0	learning environments have improved with emphasis on appropriate lighting, colors, air, physical comfort, needs for privacy and interaction, etc.
153	6	1	2	0	2	4	3	0	0	4	4	1	existing community facilities are used as part of the school, eg. libraries, recreation facilities, science laboratories, computer facilities
154	5	3	0	1	4	3	1	1	1	2	5	1	new educational institutions are small, built to ensure a sense of community
155	0	3	1	5	1	4	3	1	0	3	5	1	serious neglect with regard to maintenance of physical facilities has resulted in a deterioration of the quality of facilities
156	3	3	2	1	2	2	4	1	0	3	5	1	catering to all ages, physical structures have changed to accommodate students of mixed ages
157	0	2	2	5	1	1	6	1	0	1	7	1	the increased use of portable microtechnologies, eg. entire dictionaries on videodiscs, and access to electronic data bases has eliminated the traditional library
161	5	2	0	2	4	3	1	1	4	1	3	1	there is extensive use of computer-managed data transfer and record keeping to track individual students of all ages as they move around provinces and across Canada

Item #	**Desirability**				**Feasibility**				**Probability**			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
	high		low		high		low		high		low	
162 machines, technologies and processes are current rather than outdated	8	0	0	1	0	3	6	0	0	3	4	2
163 computers are used to gather better information about student learning and resource utilization for accountability and efficiency purposes	5	3	0	1	0	8	1	0	1	5	3	0
164 individual student learning programs are generated and managed by computers for all students	3	1	5	0	1	3	5	0	0	2	6	1
171 computer-assisted instruction is available for all teachers to use	6	2	0	1	2	5	2	0	1	2	6	0
172 computers and distance learning allow students of all ages to get the basic education they want in their home communities	7	1	1	0	2	5	2	0	2	4	2	1
173 every school and every student has access to the use of audiovisual technology, CD-ROMs, remote data bases, and computers	7	1	0	1	2	3	3	1	1	2	4	2
174 non-graded, continuous progress schools use technological and audiovisual resources for teaching, i.e., for use by students not teachers	5	2	2	0	1	4	3	1	0	2	6	1
175 computer literacy is taught as a subject, but the acquisition of current computer technology is too expensive to use it as a teaching tool	0	3	4	2	3	3	2	1	3	2	3	1
176 virtual reality technology, used as simulators, reduces the number of professional teachers needed	0	3	3	3	0	3	3	3	0	1	4	4

Item #	**Desirability**				**Feasibility**				**Probability**				
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	
	high		low		high		low		high		low		
177	5	1	3	0	1	6	2	0	0	2	7	0	through technology, schools are integrally linked to the outside community, using the media as a teaching resource
181	7	1	0	1	4	4	0	1	0	5	3	1	more direct support is available to single mothers to upgrade basic skills
182	7	2	0	0	1	7	1	0	1	4	4	0	all adult Canadians have equitable access to quality adult education and literacy programs
183	7	1	0	1	1	6	1	1	0	6	2	1	more direct support is available to unemployed and underemployed individuals to enter the education system
184	5	3	0	1	1	6	1	1	1	2	4	2	daycare (children and elders) is available in all adult education institutions
185	6	1	2	0	1	6	2	0	1	0	8	0	more extensive support services have been developed because of the effect of social trauma on families
186	6	1	2	0	2	7	0	0	2	3	3	1	schools and post-secondary institutions act as a broker for support services in the community, coordinating not duplicating services to meet the needs of students
187	6	1	2	0	2	7	0	0	1	3	5	0	support services are integrated with the education system, thus dealing holistically with individual students
188	7	1	0	1	2	6	0	1	0	6	2	1	more and better career counselling is available to secondary and adult students

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
191	5	3	1	0	2	6	1	0	1	3	5	0	extensive staff support services are available because of the increasing negative effects of stress
192	6	0	2	1	2	6	0	1	1	7	0	1	professional development activities are more accountable, better organized and skill-oriented
193	8	0	0	1	4	4	0	1	2	5	1	1	increased emphasis is placed on the need to remain current in one's field, and to develop new and different skills
194	8	0	0	1	4	4	1	0	0	7	2	0	a team approach to work has lessened stress on teachers
1101	1	1	4	3	6	1	2	0	2	5	1	1	the curriculum is very traditionally academic
1102	7	2	0	0	2	7	0	0	0	5	4	0	a more relevant curriculum has been developed, based on societies needs and "real life" issues such as conflict resolution, financial management and civic responsibility
1103	6	2	0	1	6	2	1	0	6	2	1	0	math and science offerings have been strengthened
1104	6	1	2	0	5	2	2	0	4	4	1	0	there is an increased emphasis on technical reading and writing skills, with a heavy emphasis on basic literacy
1105	4	3	1	1	0	5	3	1	0	3	5	1	all Canadian children have access to bilingual education
1106	5	2	1	1	2	5	2	0	0	6	3	0	global studies and international education have been incorporated into the curriculum

Item #	**Desirability**				**Feasibility**				**Probability**			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
	high		low		high		low		high		low	
1107	5	3	0	1	0	5	3	1	0	1	6	2
there is an increased emphasis on the arts												
1108	6	2	1	0	2	7	0	0	0	5	4	0
environmental issues are integrated into all aspects of the curriculum												
1109	2	0	5	2	2	0	2	5	1	1	2	5
the curriculum is standardized across all the provinces												
1111	4	1	2	2	2	3	3	1	1	3	4	1
a federal/national department of training and education has been established to set standards in education, to define educational goals and to promote innovation												
1112	6	2	0	1	4	3	2	0	2	6	1	0
small school boards have been amalgamated												
1113	2	4	2	1	0	6	2	1	1	2	3	3
there is provincial coordination rather than local control of postsecondary educational institutions												
1114	3	3	2	1	0	4	3	2	0	3	4	2
schools are run on a contract or voucher basis, by many different organizations: teachers, colleges, community organizations												
1115	4	2	3	0	2	5	2	0	1	3	5	0
there is site-based management for all institutions												
1116	2	3	3	1	1	5	1	2	0	4	3	2
there is community-based management for all institutions												
1117	0	4	4	1	0	2	4	3	0	2	4	3
schools have become wholly-owned not-for-profit organizations with community ownership												

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
1118	1	5	1	2	0	2	5	2	0	2	3	4	schools have become completely deregulated, allowing for extensive specialization, variety, and competition
1119	6	0	1	2	1	4	4	0	1	3	5	0	all levels of the education system have been coordinated to ensure that needs of learners and of society are better met
1121	4	2	2	1	1	6	2	0	2	5	1	1	national educational goals and objectives are established
1122	7	1	0	1	1	5	2	1	2	4	3	0	a lifelong learning culture has been adopted and systematized
1123	5	2	1	1	1	8	0	0	1	5	3	0	social equity is promoted by addressing the needs of special groups
1124	2	6	0	1	4	2	3	0	2	5	2	0	the fundamental goal of the primary/secondary school system is to develop high levels of functional literacy
1125	1	3	4	1	0	6	2	1	2	4	2	1	national goals that have been developed are related to those of other countries for the sake of international comparison
1131	3	0	4	2	4	3	2	0	3	2	4	0	the school year is longer (more days)
1132	5	0	1	2	2	2	4	0	1	4	2	1	schools are open year-round, with 3 or 4 ongoing semesters
1133	5	2	1	1	4	2	2	0	0	5	2	1	schools never close, eg. shifts of children are followed by shifts of workers retraining, then a nightshift of users of the expensive computer and communications systems

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
1134	2	3	1	2	0	1	7	0	0	3	2	3	time is irrelevant as all programs are completely modularized so that students can complete them at their own pace
1135	2	4	1	1	0	2	5	1	0	4	1	3	time is irrelevant because programs are open-entry/open-exit for all
1136	6	2	0	1	0	5	2	1	0	4	3	1	all Canadians are expected to continue formal and informal learning, eg. a personalized skills development plan
1137	1	1	5	1	0	1	3	4	1	1	2	4	time is irrelevant as microtechnology has individualized all programs
1141	5	2	0	1	1	4	3	0	2	3	3	0	ongoing research and sharing of information about effective instructional techniques within and between schools has been systematized
1142	2	0	4	2	2	4	2	0	1	3	3	1	each school defines and pursues its own mission
1143	2	2	3	1	3	5	0	0	0	5	3	0	parents and students are regarded as customers for whom schools compete
1144	5	2	1	0	4	3	1	0	2	4	2	0	education has been redefined as more than an academic endeavor that takes place in schools
1151	4	3	1	0	1	4	3	0	1	2	4	1	public schools reflect the will of parents through parent-school councils and provincial/national advisory boards
1152	1	3	2	2	1	1	5	1	0	2	5	1	parents and students are directly involved in administration

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
1153	5	2	0	1	1	5	1	1	2	3	2	1	teachers function as decision-makers in a professionally-oriented, collegial administrative model
1154	5	2	1	0	1	4	3	0	1	2	5	0	the professional bureaucracy within the education system has been reduced in size and authority
1155	3	1	4	0	0	3	3	2	0	3	2	3	schools have been restructured, transformed into something completely different and not simply incrementally modified

Appendix 7.2

ROUND 3 DATA

Round 3 Data

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
211	5	2	2	1	0	4	6	0	1	1	6	2	all potential students undergo extensive screening processes, including assessment of ability, learning style, and prior learning, to ensure that they enter programs best suited for them
212	2	5	3	0	0	7	2	1	1	3	5	1	objective evaluations in each subject area are set against provincial, national and international standards
213	4	2	4	0	3	5	2	0	3	1	5	1	all students are assessed in a national testing system
214	5	3	2	0	1	6	2	1	0	4	5	1	students are encouraged to assess their own performance, largely through technological means
215	4	4	2	0	2	7	1	0	2	5	2	1	evaluation of each student incorporates portfolio assessment of his/her work
216	4	5	1	0	1	6	3	0	0	3	6	1	student progress at all levels is reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached
217	4	3	3	0	0	7	3	0	0	3	5	2	student achievement is not compared with others but is based on individual progress and individual potential
218	1	4	5	0	0	3	5	2	0	2	6	2	student assessment is done on a functionally-based model which follows the needs determined by the community

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
219	7	3	0	0	4	4	1	1	1	5	0	4	student assessment includes results beyond those which can be measured with paper and pen
220	8	2	0	0	4	5	1	0	0	6	4	0	the evaluation system has changed from a focus on what learners can't do to what they can do, i.e., from a deficit model to an achievement/mastery model
221	8	1	1	0	2	6	2	0	1	4	5	0	special programs for students at risk of dropping out, developed in consultation with those students, have significantly reduced the drop-out rate
222	6	3	1	0	4	5	1	0	5	4	1	0	some programs combine high school and college/university courses
223	7	2	1	0	4	6	0	0	3	5	2	0	marketing is done to enhance the value of vocational education
224	9	0	1	0	2	7	1	0	2	4	4	0	students and/or their guardians have access to a great deal of information about educational options, eg. program success rates, learning approaches, unique features
225	1	5	1	3	1	6	3	0	1	3	6	0	as vouchers for fees are given directly to students who can then compare services, competition for students is fierce between institutions and marketing is a critical activity
231	2	5	3	0	6	3	1	0	2	5	3	0	direct skills instruction dominates as an means of teaching
232	2	4	4	0	1	8	1	0	1	3	6	0	instruction is dominated by co-operative or group-directed learning

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
233	6	4	0	0	3	6	1	0	4	5	1	0	instruction is a balance between direct instruction and approaches to active learning, eg. group work and simulation
234	2	3	5	0	1	6	3	0	1	2	7	0	most instruction and learning is individualized through microtechnology
235	6	2	2	0	3	5	2	0	1	5	3	1	instruction is learner-centered and teacher-managed rather than teacher-centered
236	7	1	2	0	2	5	3	0	1	5	4	0	the rigid structure and prescribed curriculum has been replaced with a relatively flexible structure and a belief that there are many ways to teach a given subject
237	0	1	6	3	3	5	2	0	2	7	0	1	a rigid structure and prescribed curriculum is in place to ensure that standards are met by all students at various stages
238	5	2	3	0	3	4	3	0	4	2	4	0	guessing and divergent thinking are encouraged as part of the creative process rather than discouraged
239	6	2	2	0	2	6	2	0	2	5	3	0	non-traditional courses blend such traditional courses as math and science, or English and history
241	4	3	3	0	2	7	1	0	2	5	3	0	the knowledge and skills to be acquired for all levels of education and training have been defined in a competency-based manner
242	4	1	4	1	1	7	2	0	1	6	3	0	programs plans address a competency profile which describes what a graduate should "look like"

Item #	**Desirability**				**Feasibility**				**Probability**			
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
	high		low		high		low		high		low	
243	3	4	2	1	3	5	2	0	1	5	3	1
secondary schools and universities specialize in programs, eg. science and technology, arts, international baccalaureate, modern languages, international business												
244	6	2	2	0	3	4	3	0	0	5	4	1
learning is viewed as a process or journey rather than a product or destination												
245	4	4	2	0	2	6	1	1	2	6	2	0
higher standards are expected of all students												
246	4	4	2	0	2	7	1	0	1	7	2	0
intended outcomes have been specified very clearly												
251	8	2	0	0	1	6	2	1	1	5	2	2
experiential learning outside the formal education system is valued and validated												
252	8	2	0	0	3	6	0	1	0	4	5	1
the formal system encourages and supports the informal learning systems for culture and recreation												
253	6	2	2	0	3	5	1	1	0	7	2	1
through learning contracts, opportunities are made possible for extended work/study in the community												
254	8	2	0	0	3	6	0	1	1	7	1	1
theoretical and abstract knowledge is heavily complemented by experiment and experience, both in and out of the classroom												
261	6	2	1	1	5	1	2	2	0	3	6	1
labelling (eg., remedial, gifted, minimally brain dysfunctional) is used only in a minor prescriptive role and not as a fixed evaluation that endures the individual's educational career												

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
262	1	4	2	3	0	6	2	2	0	4	5	1	students with special needs are fully integrated into the general education system
263	1	4	4	1	0	5	4	1	0	2	6	2	the external community takes responsibility for everything except the intellectual development role of the school and post-secondary institution
264	9	1	0	0	2	6	2	0	1	3	6	0	when remediation or enrichment is advisable, it is available immediately and at the youngest age possible
271	2	5	1	2	0	4	5	1	1	3	4	2	the system of gradeless education, or program continuity, encourages students to work at their own level of ability instead of meeting specific academic standards
272	3	4	1	2	0	7	2	1	0	3	5	2	secondary schools have been destreamed
273	5	3	2	0	1	6	2	1	0	5	4	1	students operate in an egalitarian structure where candor and dissent are permitted, and autonomy encouraged
274	4	6	0	0	1	5	3	1	0	2	6	2	the system provides flexibility and integration of age groupings so that individuals are not automatically limited to certain subject matter by age
275	3	6	1	0	0	4	5	1	1	1	3	5	individual learning is tracked through a personal lifelong learning record
276	5	2	3	0	1	4	5	0	1	3	2	4	a National Learning Credit Bank encourages portability of acquired credits

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
277	3	4	2	1	3	3	4	0	2	2	4	2	for management purposes, there is no distinction between full-time and part-time students
278	3	7	0	0	2	5	2	1	2	2	4	2	students and/or their guardians articulate their individual educational needs and plans as these are the basis of entry into the system which has a wide variety of choices
281	5	3	1	1	1	1	6	2	1	0	6	3	class sizes are smaller
282	1	2	4	3	2	1	7	0	1	0	6	3	classes have been eliminated as students work on individualized programs
283	6	3	1	0	2	6	2	0	2	4	2	2	the academic day, year, facilities and schedule are all flexible
291	8	2	0	0	3	6	1	0	2	5	3	0	students receive more direct feedback
292	3	6	1	0	2	5	3	0	1	4	4	1	instead of a student counselling system which is dependent on one or two professional guidance counsellors, "home room" teachers assume a major counselling or advisory role
293	4	4	2	0	3	5	2	0	3	5	2	0	extensive career guidance programs, for parents and students, are geared to future employment needs and opportunities
294	7	2	1	0	5	4	1	0	1	6	1	2	secondary students are treated like adult students rather than elementary students in terms of responsibility and choices

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
295	2	2	3	3	2	4	2	2	1	2	4	3	discipline is stricter with dress codes and behavior standards
2101	8	1	1	0	5	3	2	0	2	5	3	0	there are rewards for excellent teachers
2102	4	4	1	1	1	5	4	0	2	1	5	2	teachers are stratified into instructors, career teachers and lead teachers as a way of rewarding effort
2103	7	3	0	0	3	6	1	0	2	4	4	0	teachers are forced to upgrade in order to prevent the anachronism of new knowledge and "old" teachers, teaching what and how they were trained years ago
2104	4	4	2	0	3	6	1	0	2	4	2	2	increased status and rewards have been allotted to the teaching profession
2105	5	4	1	0	3	4	3	0	1	3	5	1	the personnel system provides rewards for success with students and real consequences for failure
2106	4	1	3	2	1	3	5	1	0	3	4	3	few teachers are unionized, now working for schools which offer competitive salaries and working conditions
2107	2	5	2	1	0	4	4	2	0	3	4	3	all aspects of staff management change as teachers become co-owners of the schools with the parents
2108	3	3	4	0	2	6	2	0	0	1	8	1	the results of student assessment are used to evaluate the effectiveness of teachers
2111	7	2	1	0	4	4	2	0	2	2	5	1	administration encourages community input, even community control of some aspects

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
2112	5	2	1	2	5	4	1	0	2	4	3	1	much administrative work is done by non-educators
2113	3	3	3	1	4	4	2	0	0	4	6	0	administration is restructured to incorporate the distinction between educational leaders and school managers
2114	3	4	3	0	1	4	4	1	1	2	5	2	administration includes monitoring a proper system for assessing innovations under controlled conditions by independent evaluators
2121	2	1	4	3	2	5	3	0	0	3	7	0	business in greatly involved in education, directly with funding and indirectly with program support
2122	3	7	0	0	3	5	2	0	1	5	3	1	a curriculum policy advisory board with representatives from parents, business, labor, trustees, post-secondary education, and teachers regularly modifies the curriculum
2123	6	3	1	0	5	3	2	0	2	5	3	0	all students have access to work programs, i.e., more co-operative education programs
2124	9	1	0	0	3	7	0	0	1	4	5	0	schools seek to prevent problems rather than trying to remediate failure, working with parents and the community to solve larger problems
2125	5	2	2	1	1	7	2	0	2	3	5	0	parents and the business community define the results they expect from the educational institutions in their community
2126	2	5	3	1	2	7	1	1	1	6	2	1	community involvement is managed and coordinated by the schools

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
2127	7	3	0	0	2	5	3	0	0	6	3	1	the community and the educational institutions are fully integrated so that institutions don't exist in isolation
2131	3	5	2	0	3	5	2	0	2	2	6	0	with a significant reduction in the expectations placed on schools, schools focus on academics, leaving other social programs and services to meet non-academic needs
2132	6	3	1	0	1	6	3	0	0	5	4	1	the education system deals holistically with each individual student, participating in a network of programs and services to ensure that learning is maximized
2133	3	3	4	0	2	4	4	0	1	1	4	4	whole families become involved in the education opportunities offered to employees by business and industry
2141	3	4	3	0	3	6	1	0	3	4	2	1	at every level, there is accountability through testing
2142	5	4	1	0	2	7	1	0	2	3	5	0	excellence, effectiveness and efficiency have been defined for all levels of the system
2143	9	1	0	0	6	4	0	0	2	3	4	1	accountability focuses on results rather than on compliance with rules and regulations
2144	6	3	1	0	2	5	3	0	1	2	5	2	the government measures and publicizes many different kinds of results, eg. test scores, student satisfaction surveys, dropout rates, that the consumer uses to make choices in schools
2145	5	4	1	0	1	6	3	0	1	2	7	0	curricula are evaluated regularly for relevance to international society

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
2151	6	3	1	0	3	5	2	0	1	3	5	1	the education system accepts responsibility for promoting positive proactive change rather than maintenance of the status quo
2152	6	2	2	0	3	5	2	0	0	3	5	2	the education system is guided by a national vision of a better future for all Canadians
2153	7	1	2	1	2	5	2	2	1	2	6	2	economic and education priorities have been integrated at the local, provincial and national levels
2154	7	3	0	0	0	4	6	0	0	2	6	2	the critical relationship between quality of education and quality of life is recognized in the priority status of education in terms of resource allocation and political attention
2155	5	5	1	0	0	10	1	0	1	6	3	0	all educational institutions support and demonstrate educational entrepreneurialism, eg. innovative and responsive programs such as "women in science awareness program"
2156	2	4	2	2	2	4	4	0	2	1	7	0	the education system is integrally linked with the media as a learning resource
2157	8	2	0	0	6	4	0	0	3	4	3	0	all levels of the system are actively involved in environmental preservation
2158	2	4	3	1	1	5	3	1	2	3	4	1	external linkages are limited in order that the individual student adopts the attitude of control over one's own life
2159	6	4	0	0	3	4	3	0	2	3	3	2	extensive coordination exists between the variety of teaching/learning agencies in society

Item #	Desirability				Feasibility				Probability			
	1	2	3	4	1	2	3	4	1	2	3	4
	high		low		high		low		high		low	
2160	7	3	0	0	5	5	0	0	3	2	5	0

there is more and different vocational training, with improved access to vocational and technical education

Appendix 7.3

ROUND 4 DATA

Round 4 Data

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
311	8	1	0	0	4	5	0	0	2	5	2	0	students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career
312	6	3	0	0	2	6	0	1	0	5	3	1	students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities
313	8	0	1	0	3	5	1	0	1	2	6	0	students no longer focus on content, i.e., acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information
314	8	1	0	0	1	5	3	0	1	5	2	1	students develop strategies for dealing with the over-supply of knowledge
315	8	2	0	0	3	6	1	0	3	6	1	0	students acquire the attitude that change is unavoidable and therefore anticipation, planning and choice are important
316	7	2	0	0	2	6	1	0	3	5	1	0	students learn that education is a lifelong process, one only tangentially related to schools
317	7	1	1	0	2	6	1	0	1	4	4	0	self-education has become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
318	7	1	1	0	2	1	6	0	2	0	6	1	all graduates demonstrate high levels of various types of literacy, i.e., cultural, computer, science, sex, health, media and international literacy
319	9	0	0	0	2	7	0	0	2	3	4	0	all students exhibit a high degree of basic literacy and numeracy, i.e., reading, writing, communication skills, computation skills and logic
320	8	1	0	0	2	4	3	0	1	4	3	1	students develop a sense of responsibility and accountability for their actions through opportunities to make creative decisions
321	4	3	2	0	1	6	2	0	1	3	4	1	there is a shift in our understanding of ourselves as separate individuals, each seeking our own welfare, to an understanding of how we fit collectively into social, biological and physical environments
322	5	3	0	1	1	5	3	0	1	3	5	0	students have become consumers, examining the opportunities and making informed choices
323	5	3	0	1	0	5	4	0	0	4	3	2	students have accepted the responsibility to become involved in program development and decision-making
324	7	2	0	0	1	4	3	1	0	3	5	1	all citizens realize that, given the options and imperatives for learning, they should systematically access programs
325	3	4	2	0	1	4	3	1	1	2	4	2	learners realize that there are no categorical divisions in society, the global economy, the environment, leading to new worldviews that are without environmental exploitation

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
326	5	2	1	1	1	3	3	2	1	0	4	4	the result of increased self-education and awareness of the growing interdependencies of economies, communities, environments and communications provides the opportunity to pursue several different careers at once
327	9	0	0	0	1	6	1	1	0	4	3	2	students respect the basic human values of tolerance, compassion and honesty while displaying technical expertise and creative thinking
328	8	0	1	0	3	4	2	0	1	5	3	0	students through the formal education system become adept at functioning fully in society, acquiring practical work and life skills
329	8	1	0	0	2	6	1	0	3	2	4	0	graduates have the employability skills to succeed in an increasingly competitive world
331	8	1	0	0	1	6	1	1	1	3	4	1	each community in Canada has a range of educational services, with equitable access to quality programs for its community members
332	7	1	1	0	1	3	4	1	1	2	4	2	the education system becomes a contributing community member, assessing and providing for local learning and training needs of all citizens
333	6	1	2	0	0	3	5	1	0	2	5	2	communities develop plans and solve problems in conjuntion with the education system in its capacity to conduct research and provide manpower
334	8	1	0	0	4	3	2	0	1	4	3	1	community members, empowered through lifelong learning, are actively involved in local political, economic, social and educational institutions

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
341	6	2	0	1	1	5	2	1	1	3	3	2	there is a common understanding of the intended products of the education system in Canada
342	7	2	0	0	3	4	1	1	2	4	2	1	through increasing human-rights education, Canada is building a tolerant, equitable, and just society
343	6	1	1	1	3	4	2	0	2	3	3	1	education has become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity
344	7	2	0	0	3	5	0	1	3	4	2	0	the critical role of the public school as an equalizer in Canadian society has been retained, as it has maintained a competitive advantage with private schools
345	9	0	0	0	2	7	0	0	2	4	3	0	products of the formal education system, i.e., graduates, have strong basic literacy skills, the capacity to work together, and a will to continue to learn
346	7	1	1	0	1	5	2	1	1	4	2	2	citizens involved in the education system have learned that each societal problem has technical, economic, social, political, and human elements, and are prepared to work constructively toward solutions
347	6	2	1	0	1	7	1	0	2	3	3	1	an industry of knowledge creation and marketing has developed in the post-secondary education sector which contributes substantially to Canada's economic success
351	9	0	0	0	0	6	2	1	0	6	3	0	employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills

Item #	**Desirability**				**Feasibility**				**Probability**				
	1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	
	high		low		high		low		high		low		
352	3	0	5	1	1	4	2	2	2	0	5	2	a standard test for entry-level job applicants assesses both their academic skills and personality traits and serves as a success indicator for the educational system
353	6	3	0	0	2	5	2	0	1	6	2	0	new critical skills that emerge are integrated into the curriculum of the pre-employment institutions
354	9	0	0	0	2	3	3	1	1	1	4	3	training and education budgets are high as corporations stretch for new results through human resource development
355	1	4	2	2	0	6	3	0	1	2	3	3	corporations reach deeply into the educational system to influence the quality of its supply of workers
356	4	4	1	0	2	5	2	0	0	4	5	0	industry in each community has become a partner in the shift from primary reliance on theoretical, abstract "book knowledge," to theoretical knowledge heavily complemented by experiment and experience, both in and out of the classroom
361	8	1	0	0	4	5	0	0	2	4	3	0	despite increasing reliance on technology and the potential dehumanization, human relationships between teachers and learners are of primary importance
362	9	0	0	0	1	5	3	0	1	2	5	1	staff in the education system experience intense job satisfaction and feel appreciated and respected
363	9	0	0	0	3	4	1	1	3	2	3	1	staff model lifelong learning and leadership responsibility
371	7	2	0	0	1	5	3	0	2	2	4	1	institutions have a clear mandate and resources with which to adequately address it in an ongoing manner and are, therefore, able to demonstrate accountability in a variety of ways

Item #	Desirability				Feasibility				Probability				
	1	2	3	4	1	2	3	4	1	2	3	4	
	high		low		high		low		high		low		
372	7	2	0	0	0	6	3	0	0	6	3	0	institutions are linked in productive ways to other social and economic institutions to maximize service to individuals and to Canadian society
381	5	3	1	0	0	5	3	1	1	3	5	0	the issues of education, training and retraining are dealt with in an interdepartmental fashion with a coordinating council at the federal level
382	4	2	2	1	1	6	1	1	2	4	2	1	adult training and retraining are embedded in various social programs, eg. re-training is a prerequisite for UI benefits
383	3	1	2	3	2	3	1	3	2	1	3	3	a federal government agency coordinates the systematic development of education and training for all citizens, reducing the need for ten very similar and very large provincial bureaucracies
384	5	3	0	1	2	5	1	1	2	3	3	1	Canadian educational achievement compares favorably in the international arena
385	7	2	0	0	3	4	2	0	1	4	4	0	through the education system, contemporary problems are introduced and researched so that citizens are aware and involved in governance issues

Appendix 7.4

ITEMS ELIMINATED FROM ROUNDS 2-4

Items Eliminated from Rounds 2-4

1. The Inputs and Resources of the System (from Round 2)

Personnel

126 teachers are highly-credentialled expert resource persons in a system of individualized learning

127 with increased home schooling, teachers serve as coaches of parents and community groups who are backed by technology

Physical facilities

155 serious neglect with regard to maintenance of physical facilities has resulted in a deterioration of the quality of facilities

157 the increased use of portable microtechnologies, eg. entire dictionaries on videodiscs, and access to electronic data bases has eliminated the traditional library

Technological equipment for management

164 individual student learning programs are generated and managed by computers for all students

Technological equipment for instruction

176 virtual reality technology, used as simulators, reduces the number of professional teachers needed

Curriculum and teaching materials

1109 the curriculum is standardized across all the provinces

Adminstrative structure

1117 schools have become wholly-owned not-for-profit organizations with community ownership

Time

1137 time is irrelevant as microtechnology has individualized all programs

Institutional organization

1152 parents and students are directly involved in administration

1155 schools have been restructured, transformed into something completely different and not simply incrementally modified

2. The Processes and Practices in the System (from Round 3)

Student assessment

218 student assessment is done on a functionally-based model which follows the needs determined by the community

Logistics

282 classes have been eliminated as students work on individualized programs

Student management

295 discipline is stricter with dress codes and behavior standards

Staff management

2106 few teachers are unionized, now working for schools which offer competitive salaries and working conditions

Involvement with community

2121 business in greatly involved in education, directly with funding and indirectly with program support

3. System Outputs or Outcomes (from Round 4)

Employers

352 a standard test for entry-level job applicants assesses both their academic skills and personality traits and serves as an educational needs assessment for business and industry

Government departments, funders and policy makers

383 a federal government agency coordinates the systematic development of education and training for all citizens, reducing the need for ten very similar and very large provincial bureaucracies

Appendix 7.5

ITEMS ELIMINATED
FROM ROUNDS 2-4

(High Desirability but
Low Feasibility and Probability)

Items Eliminated from Rounds 2-4

1. The Inputs and Resources of the System (from Round 2)

Physical facilities

156 catering to all ages, physical structures have changed to accommodate students of mixed ages

Technological equipment for management

162 machines, technologies and processes are current rather than outdated

Administrative structure

1114 schools are run on a contract or voucher basis, by many different organizations: teachers, colleges, community organizations

1118 schools have become completely deregulated, allowing for extensive specialization, variety, and competition

Time

1134 time is irrelevant as all programs are completely modularized so that students can complete them at their own pace

1135 time is irrelevant because programs are open-entry/open-exit for all

2. The Processes and Practices in the System (from Round 3)

Student assessment

211 all potential students undergo extensive screening processes, including assessment of ability, learning style, and prior learning, to ensure that they enter programs best suited for them

Supplemental programs

263 the external community takes responsibility for everything except the intellectual development role of the school and post-secondary institution

Student learning management

271 the system of gradeless education, or program continuity, encourages students to work at their own level of ability instead of meeting specific academic standards

275 individual learning is tracked through a personal lifelong learning record

276 a National Learning Credit Bank encourages portability of acquired credits

Logistics

281 class sizes are smaller

Staff management

2107 all aspects of staff management change as teachers become co-owners of the schools with the parents

Administrative behaviour

2114 administration includes monitoring a proper system for assessing innovations under controlled conditions by independent evaluators

Interaction with the external environment

2154 the critical relationship between quality of education and quality of life is recognized in the priority status of education in terms of resource allocation and political attention

3. System Outputs or Outcomes (from Round 4)

Individual students

318 all graduates demonstrate high levels of various types of literacy, i.e., cultural, computer, science, sex, health, media and international literacy

Students collectively

326 the result of increased self-education and awareness of the growing interdependencies of economies, communities, environments and communications provides the opportunity to pursue several different careers at once

Local community

332 the education system becomes a contributing community member, assessing and providing for local learning and training needs of all citizens

333 communities develop plans and solve problems in conjunction with the education system with its capacity to conduct research and provide human resources, professional and student

Appendix 7.6

ITEMS RETAINED
FROM ROUNDS 2-4
(Desirable, Probable and Feasible)

Items Retained from Rounds 2-4

1. The Inputs and Resources of the System (from Round 2)

Entering students

111 the growing number of poor children at risk of educational problems has required extensive development of early intervention programs to identify and support these children

112 increasing numbers of students of all ages who do not speak either of Canada's official languages has necessitated the availability of extensive language readiness programs

113 college and university entrants demonstrate exemplary basic literacy skills

114 increasing numbers of students of all ages experience stress from societal problems and access a variety of support services

115 increasing numbers of foreign students enroll in all levels of Canadian education

Personnel

121 significant changes in teacher preparation have resulted in teachers with advanced knowledge about learning and effective teaching

123 in their preparation, teachers have experienced more practical work earlier, and have been evaluated at an early stage for attitude and suitability

Finances

133 schools and universities are forced to earn money by attracting more students or providing new services

134 university and college fees have been increased to reflect actual costs

139 disparities in financial resources between jurisdictions and provinces have been resolved through an equalization system

Available and unused resources

142 the school has extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts

143 peer tutoring is systematized

144 secondary and post-secondary students have mentors drawn from the community

Physical facilities

151 uniform-sized, sterile classrooms have been replaced by facilities which enable large and small group instruction as well as independent study

Technological equipment for management

161 there is extensive use of computer-managed data transfer and record keeping to track individual students of all ages as they move around provinces and across Canada

163 computers are used to gather better information about student learning and resource utilization for accountability and efficiency purposes

Technological equipment for instruction

172 computers and distance learning allow students of all ages to get the basic education they want in their home communities

Student support services

181 more direct support is available to single mothers to upgrade basic skills

182 all adult Canadians have equitable access to quality adult education and literacy programs

183 more direct support is available to unemployed and underemployed individuals to enter the education system

186 schools and post-secondary institutions act as a broker for support services in the community, coordinating not duplicating services to meet the needs of students

188 more and better career counselling is available to secondary and adult students

Staff support services

192 professional development activities are more accountable, better organized and skill-oriented

193 increased emphasis is placed on the need to remain current in one's field, and to develop new and different skills

194 a team approach to work has lessened stress on teachers

Curriculum and teaching materials

1102 a more relevant curriculum has been developed, based on societies' needs and "real life" issues such as conflict resolution, financial management and civic responsibility

1103 math and science offerings have been strengthened

1104 there is an increased emphasis on technical reading and writing skills, with a heavy emphasis on basic literacy

1106 global studies and international education have been incorporated into the curriculum

1108 environmental issues are integrated into all aspects of the curriculum

Administrative structure

1112 small school boards have been amalgamated

Stated goals and plans

1121 national educational goals and objectives are established

1122 a lifelong learning culture has been adopted and systematized

1123 social equity is promoted by addressing the needs of special groups

1124 the fundamental goal of the primary/secondary school system is to develop high levels of functional literacy

Time

1132 schools are open year-round, with 3 or 4 ongoing semesters

1133 schools never close, eg. shifts of children are followed by shifts of workers retraining, then a nightshift of users of the expensive computer and communications systems

1136 all Canadians are expected to continue formal and informal learning, eg. a personalized skills development plan

Organizational culture

1141 ongoing research and sharing of information about effective instructional techniques within and between schools has been systematized

1144 education has been redefined as more than an academic endeavor that takes place in schools

Institutional organization

1153 teachers function as decision-makers in a professionally-oriented, collegial administrative model

2. The Processes and Practices in the System (from Round 3)

Student assessment

215 evaluation of each student incorporates portfolio assessment of his/her work

219 student assessment includes results beyond those which can be measured with paper and pen

220 the evaluation system has changed from a focus on what learners can't do to what they can do, i.e., from a deficit model to an achievement/mastery model

Student recruitment and program marketing

221 special programs for students at risk of dropping out, developed in consultation with those students, have significantly reduced the drop-out rate

222 some programs combine high school and college/university courses

223 marketing is done to enhance the value of vocational education

224 students and/or their guardians have access to a great deal of information about educational options, eg. program success rates, learning approaches, unique features

Instructional methods and strategies

231 direct skills instruction dominates as an means of teaching

233 instruction is a balance between direct instruction and approaches to active learning, eg. group work and simulation

235 instruction is learner-centered and teacher-managed rather than teacher-centered

236 the rigid structure and prescribed curriculum has been replaced with a relatively flexible structure and a belief that there are many ways to teach a given subject

238 guessing and divergent thinking are encouraged as part of the creative process rather than discouraged

239 non-traditional courses blend such traditional courses as math and science, or English and history

Formal program plans and intended outcomes

241 the knowledge and skills to be acquired for all levels of education and training have been defined in a competency-based manner

243 secondary schools and universities specialize in programs, eg. science and technology, arts, international baccalaureate, modern languages, international business

244 learning is viewed as a process or journey rather than a product or destination

245 higher standards are expected of all students

246 intended outcomes have been specified very clearly

Informal learning opportunities and resources

251 experiential learning outside the formal education system is valued and validated

253 through learning contracts, opportunities are made possible for extended work/study in the community

254 theoretical and abstract knowledge is heavily complemented by experiment and experience, both in and out of the classroom

Logistics

283 the academic day, year, facilities and schedule are all flexible

Student management

291 students receive more direct feedback

292 instead of a student counselling system which is dependent on one or two professional guidance counsellors, "home room" teachers assume a major counselling or advisory role

293 extensive career guidance programs, for parents and students, are geared to future employment needs and opportunities

294 secondary students are treated like adult students rather than elementary students in terms of responsibility and choices

Staff management

2101 there are rewards for excellent teachers

2103 teachers are forced to upgrade in order to prevent the anachronism of new knowledge and "old" teachers, teaching what and how they were trained years ago

2104 increased status and rewards have been allotted to the teaching profession

Administrative behaviour

2112 much administrative work is done by non-educators

Involvement with community

2122 a curriculum policy advisory board with representatives from parents, business, labor, trustees, post-secondary education, and teachers regularly modifies the curriculum

2123 all students have access to work programs, i.e., more co-operative education programs

2124 schools seek to prevent problems rather than trying to remediate failure, working with parents and the community to solve larger problems

2125 parents and the business community define the results they expect from the educational institutions in their community

2126 community involvement is managed and coordinated by the schools

2127 the community and the educational institutions are fully integrated so that institutions don't exist in isolation

Links to other programs and services

2132 the education system deals holistically with each individual student, participating in a network of programs and services to ensure that learning is maximized

Program evaluation, development and accountability

2141 at every level, there is accountability through testing

2142 excellence, effectiveness and efficiency have been defined for all levels of the system

2143 accountability focuses on results rather than on compliance with rules and regulations

Interaction with the external environment

2155 all educational institutions support and demonstrate educational entrepreneurialism, eg. innovative and responsive programs such as "women in science awareness program"

2156 the education system is integrally linked with the media as a learning resource

2157 all levels of the system are actively involved in environmental preservation

2158 external linkages are limited in order that the individual student adopts the attitude of control over one's own life

2159 extensive coordination exists between the variety of teaching/learning agencies in society

2160 there is more and different vocational training, with improved access to vocational and technical education

3. System Outputs or Outcomes (from Round 4)

Individual students

311 students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career

312 students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities

314 students develop strategies for dealing with the over-supply of knowledge

315 students acquire the attitude that change is unavoidable and therefore anticipation, planning and choice are important

316 students learn that education is a lifelong process, one only tangentially related to schools

317 self-education has become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity

319 all students exhibit a high degree of basic literacy and numeracy, i.e., reading, writing, communication skills, computation skills and logic

320 students develop a sense of responsibility and accountability for their actions through opportunities to make creative decisions

Students collectively

328 students through the formal education system become adept at functioning fully in society, acquiring practical work and life skills

329 graduates have the employability skills to succeed in an increasingly competitive world

Local community

334 community members, empowered through lifelong learning, are actively involved in local political, economic, social and educational institutions

Canadian society

342 through increasing human-rights education, Canada is building a tolerant, equitable, and just society

343 education has become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity

344 the critical role of the public school as an equalizer in Canadian society has been retained, as it has maintained a competitive advantage with private schools

345 products of the formal education system, i.e., graduates, have strong basic literacy skills, the capacity to work together, and a will to continue to learn

346 citizens involved in the education system have learned that each societal problem has technical, economic, social, political, and human elements, and are prepared to work constructively toward solutions

347 an industry of knowledge creation and marketing has developed in the post-secondary education sector which contributes substantially to Canada's economic success

Employers

351 employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills

353 new critical skills that emerge are integrated into the curriculum of the pre-employment institutions

Teachers, support staff and volunteers

361 despite increasing reliance on technology and the potential dehumanization, human relationships between teachers and learners are of primary importance

363 staff model lifelong learning and leadership responsibility

Administrators and institutions

372 institutions are linked in productive ways to other social and economic institutions to maximize service to individuals and to Canadian society

Government departments, funders and policy makers

382 adult training and retraining are embedded in various social programs, eg. re-training is a prerequisite for UI benefits

384 Canadian educational achievement compares favorably in the international arena

385 through the education system, contemporary problems are introduced and researched so that citizens are aware and involved in governance issues

Appendix 7.7

ITEMS RETAINED

FROM ROUNDS 2-4

(Probable but not Desirable)

Items Retained from Rounds 2-4

1. The Inputs and Resources of the System (from Round 2)

Finances

131 public funding has been reduced, forcing the elimination of all but core academic services

135 significant direct financial contributions are made by business and industry

136 user fees are charged for all extra-curricular activities, eg. sports, music, and other special interests

Technological equipment for instruction

175 computer literacy is taught as a subject, but the acquisition of current computer technology is too expensive to use it as a teaching tool

Curriculum and teaching materials

1101 the curriculum is very traditionally academic

Stated goals and plans

1125 national goals that have been developed are related to those of other countries for the sake of international comparison

Time

1131 the school year is longer (more days)

Organizational culture

1142 each school defines and pursues its own mission

1143 parents and students are regarded as customers for whom schools compete

2. The Processes and Practices in the System (from Round 3)

Instructional methods and strategies

237 a rigid structure and prescribed curriculum is in place to ensure that standards are met by all students at various stages

Formal program plans and intended outcomes

242 programs plans address a competency profile which describes what a graduate should "look like"

Appendix 7.8

ITEMS RETAINED

FROM ROUNDS 2-4

(High desirability, high feasibility
but low probability)

Items Retained from Rounds 2 - 4

1. The Inputs and Resources of the System (from Round 2)

Personnel

122 teachers have acquired advanced technological skills during teacher training and have opportunities to maintain enhanced skills

124 more seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers

125 there are fewer professional teachers and more paraprofessionals in the schools, with teachers viewed as learning managers

Finances

132 a voucher system, which gives the allocation of school finance to customers, allows parents and adult students to choose between competing educational options

137 the cost of administration has been significantly reduced through considerable reduction in the size of the administrative structures

138 the system of funding education through property taxes has been eliminated

140 with a focus on home-based and community-based teaching, the financing of education has gone from highly capital intensive to moderately capital intensive

Available and unused resources

141 more parents and unemployed persons volunteer as instructional assistants and resource persons

Physical facilities

153 existing community facilities are used as part of the school, eg. libraries, recreation facilities, science laboratories, computer facilities

154 new educational institutions are small, built to ensure a sense of community

Technological equipment for instruction

171 computer-assisted instruction is available for all teachers to use

173 every school and every student has access to the use of audiovisual technology, CD-ROMs, remote data bases, and computers

174 non-graded, continuous progress schools use technological and audiovisual resources for teaching, i.e., for use by students not teachers

177 through technology, schools are integrally linked to the outside community, using the media as a teaching resource

Student support services

184 daycare (children and elders) is available in all adult education institutions

185 more extensive support services have been developed because of the effect of social trauma on families

187 support services are integrated with the education system, thus dealing holistically with individual students

Staff support services

191 extensive staff support services are available because of the increasing negative effects of stress

Curriculum and teaching materials

1105 all Canadian children have access to bilingual education

1107 there is an increased emphasis on the arts

Adminstrative structure

1111 a federal/national department of training and education has been established to set standards in education, to define educational goals and to promote innovation

1113 there is provincial coordination rather than local control of postsecondary educational institutions

1115 there is site-based management for all institutions

1116 there is community-based management for all institutions

1119 all levels of the education system have been coordinated to ensure that needs of learners and of society are better met

Institutional organization

1151 public schools reflect the will of parents through parent-school councils and provincial/national advisory boards

1154 the professional bureaucracy within the education system has been reduced in size and authority

2. The Processes and Practices in the System (from Round 3)

Student assessment

212 objective evaluations in each subject area are set against provincial, national and international standards

213 all students are assessed in a national testing system

214 students are encouraged to assess their own performance, largely through technological means

216 student progress at all levels is reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached

217 student achievement is not compared with others but is based on individual progress and individual potential

Student recruitment and program marketing

225 as vouchers for fees are given directly to students who can then compare services, competition for students is fierce between institutions and marketing is a critical activity

Instructional methods and strategies

232 instruction is dominated by co-operative or group-directed learning

234 most instruction and learning is individualized through microtechnology

Informal learning opportunities and resources

252 the formal system encourages and supports the informal learning systems for culture and recreation

Supplemental programs

261 labelling (eg., remedial, gifted, minimally brain dysfunctional) is used only in a minor prescriptive role and not as a fixed evaluation that endures the individual's educational career

262 students with special needs are fully integrated into the general education system

264 when remediation or enrichment is advisable, it is available immediately and at the youngest age possible

Student learning management

272 secondary schools have been destreamed

273 students operate in an egalitarian structure where candor and dissent are permitted, and autonomy encouraged

274 the system provides flexibility and integration of age groupings so that individuals are not automatically limited to certain subject matter by age

277 for management purposes, there is no distinction between full-time and part-time students

278 students and/or their guardians articulate their individual educational needs and plans as these are the basis of entry into the system which has a wide variety of choices

Staff management

2102 teachers are stratified into instructors, career teachers and lead teachers as a way of rewarding effort

2105 the personnel system provides rewards for success with students and real consequences for failure
2108 the results of student assessment are used to evaluate the effectiveness of teachers

Administrative behavior

2111 administration encourages community input, even community control of some aspects

2113 administration is restructured to incorporate the distinction between educational leaders and school managers

Links to other programs and services

2131 with a significant reduction in the expectations placed on schools, schools focus on academics, leaving other social programs and services to meet non-academic needs

2133 whole families become involved in the education opportunities offered to employees by business and industry

Program evaluation, development and accountability

2144 the government measures and publicizes many different kinds of results, eg. test scores, student satisfaction surveys, dropout rates, that the consumer uses to make choices in schools

2145 curricula are evaluated regularly for relevance to international society

Interaction with the external environment

2151 the education system accepts responsibility for promoting positive proactive change rather than maintenance of the status quo

2152 the education system is guided by a national vision of a better future for all Canadians

2153 economic and education priorities have been integrated at the local, provincial and national levels

2156 the education system is integrally linked with the media as a learning resource

3. System Outputs or Outcomes (from Round 4)

Individual students

313 students no longer focus on content, i.e., acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information

Students collectively

321 there is a shift in our understanding of ourselves as separate individuals, each seeking our own welfare, to an understanding of how we fit collectively into social, biological and physical environments

322 students have become consumers, examining the opportunities and making informed choices

323 students have accepted the responsibility to become involved in program development and decision-making

324 potential students realize that, given the options and imperatives for learning, they should systematically access programs

325 learners realize that there are no categorical divisions in society, the global economy, the environment and this leads to new worldviews without social and environmental exploitation

327 students respect the basic human values of tolerance, compassion and honesty while displaying technical expertise and creative thinking

Local community

331 each community in Canada has a range of educational services, with equitable access to quality programs for its community members

Canadian society

341 there is a common understanding of the intended products of the education system in Canada

Employers

354 training and education budgets are high as corporations stretch for new results through human resource development

355 corporations reach deeper into the educational system to influence the quality of its supply of workers

356 industry in each community has become a partner in the shift from primary reliance on theoretical, abstract "book knowledge," to theoretical knowledge heavily complemented by experiment and experience, both in and out of the classroom

Teachers, support staff and volunteers

362 staff in the education system experience intense job satisfaction and feel appreciated and respected by the community

Administrators and institutions

371 institutions have a clear mandate and resources with which to adequately address it in an ongoing manner and are, therefore, able to demonstrate accountability in a variety of ways

Government departments, funders and policy makers

381 the issues of education, training and retraining are dealt with in an interdepartmental fashion with a coordinating council

One final item, judged to be highly desirable and probable but difficult to implement was the following.

1. The inputs and Resources in the System (from Round 2)

Physical facilities

152 learning environments have improved with emphasis on appropriate lighting, colors, air, physical comfort, needs for privacy and interaction, etc.

Appendix 7.9

ROUND 5 DATA

Item #	Occurrence			Catalyst							
	1	2	3	1	2	3	4	5	6	7	8
101	13	13	1	2	3	6	7	5	3	0	1
102	15	11	1	14	5	4	3	0	0	0	1
103	5	20	2	3	0	4	5	9	4	0	2
104	4	10	12	0	0	5	4	0	12	0	5
105	13	10	3	1	0	2	4	0	19	0	0
106	6	15	5	2	6	1	5	1	7	2	2
107	7	19	0	0	11	5	5	2	2	0	1
108	5	13	8	1	2	1	3	1	1	13	4
109	14	11	1	2	1	6	8	2	3	3	1
110	17	8	1	2	0	4	5	5	7	1	2
111	5	10	11	1	0	5	4	8	2	0	6
112	10	7	9	5	0	4	3	1	4	2	7
113	16	8	2	4	1	2	11	2	2	4	0
114	15	11	0	0	2	2	11	6	3	0	2
115	7	14	5	3	2	1	10	2	4	1	3
116	6	16	4	0	0	2	6	1	15	0	2
117	18	7	1	0	9	1	3	10	0	2	1
118	11	11	4	2	9	0	3	6	0	0	3
119	5	16	5	2	4	2	9	0	3	2	4
120	5	15	6	1	1	1	9	9	0	2	3
121	13	10	3	19	1	0	1	0	1	2	2
122	10	13	3	3	0	15	1	2	1	0	4
123	6	12	8	1	5	2	2	4	1	2	9
124	7	14	5	4	0	1	7	1	1	9	3
125	15	11	0	2	13	0	6	2	1	1	1
126	9	14	3	4	4	1	8	2	2	1	4
127	15	9	2	0	5	3	12	3	1	0	2
128	7	15	4	1	0	0	1	2	0	21	1
129	7	17	2	2	1	2	15	1	2	2	1
130	3	14	9	1	2	1	7	6	1	0	8
131	16	5	5	0	5	1	10	1	0	6	3
132	12	9	5	15	2	1	1	1	0	2	4
133	14	10	2	4	0	1	5	1	1	9	5
134	11	11	4	4	5	1	5	1	3	4	3
135	7	14	5	4	3	1	7	0	1	5	5
136	12	6	7	6	7	0	2	0	1	4	5
137	18	5	2	6	1	0	2	1	1	11	3
138	12	9	4	6	0	0	2	2	0	9	6
139	9	11	5	7	1	0	4	1	0	8	4
140	15	9	1	2	3	4	10	1	1	2	2

Item #	Occurrence			Catalyst							
	1	2	3	1	2	3	4	5	6	7	8
141	8	15	2	4	3	0	5	4	0	5	4
142	21	4	0	2	8	0	9	0	3	2	1
143	11	13	1	3	10	1	5	2	1	2	1
144	8	14	3	2	0	3	6	2	1	4	7
145	8	14	3	4	3	1	7	3	1	3	3
146	11	12	2	4	3	0	8	3	3	3	1
147	13	10	2	3	4	5	6	0	1	4	2
148	15	10	0	0	19	1	3	1	0	1	0
149	13	10	2	7	9	0	4	1	2	0	2
150	6	16	3	1	12	0	5	2	2	2	1
151	9	16	0	6	0	1	9	1	1	6	1
152	12	13	0	5	0	1	10	0	1	6	2
153	16	9	0	2	4	1	8	0	1	7	2

Item #	Obstacle (reason for non-occurrence)					
	1	2	3	4	5	6
201	7	1	0	12	1	4
202	0	6	1	9	3	6
203	1	2	2	16	1	3
204	2	1	4	15	1	2
205	0	2	1	17	0	5
206	1	15	4	4	1	0
207	4	11	6	4	0	0
208	1	5	6	9	2	2
209	2	7	3	5	0	8
210	5	0	4	9	2	5
211	1	5	5	2	5	7
212	4	7	7	1	0	6
213	2	8	7	2	0	6
214	2	8	5	3	1	6
215	6	6	8	0	2	3
216	0	2	6	0	7	10
217	7	1	6	4	2	5
218	11	1	0	3	4	6
219	9	2	1	7	2	4
220	20	0	0	0	0	5

Item #	Obstacle (reason for non-occurrence)					
	1	2	3	4	5	6
221	13	2	3	3	2	2
222	4	3	6	3	5	4
223	0	2	10	2	2	9
224	1	2	3	4	3	12
225	8	0	3	1	0	13
226	0	1	1	9	3	11
227	1	2	1	16	2	3
228	0	7	0	12	1	5
229	4	5	2	9	3	2
230	1	3	4	4	0	13
231	1	1	3	8	3	9
232	0	4	0	11	0	10
233	1	3	1	10	3	7
234	5	2	4	6	1	7
235	0	3	0	13	2	7
236	0	2	0	11	4	8
237	3	1	0	9	5	7
238	12	5	3	2	0	3
239	21	0	0	0	0	4
240	2	5	1	11	3	3

Appendix 7.10

ROUND 5.1 DATA ANALYSIS

(Anticipated Changes with
Catalysts for Initiation)

Changes and Catalysts

Before the year 2000

The following are changes that the respondents forecast would be implemented before the year 2000, with the top three catalysts for change for each in terms of percentage of responses.

Change: 1

Increasing numbers of students of all ages who do not speak either of Canada's official languages have necessitated the availability of extensive language readiness programs.

Catalysts:

27%	federal government intervention and national planning
19%	changed provincial government priorities and programs
19%	community partnerships bringing new / more resources

Change: 2

Special programs for students at risk of dropping out, developed in consultation with those students, have significantly reduced the drop-out rate.

Catalysts:

42%	changed provincial government priorities and programs
15%	organized / increased pressure from students and parents
15%	pressure from teachers and administrators

Change: 3

The school has extended into the community with expanded fieldtrips, apprenticeships, relationships with community businesses, visiting experts, and student mentors drawn from the community.

Catalysts:

38%	community partnerships bringing new / more resources
35%	direct involvement of employers and businesses
12%	changed provincial government priorities and programs

Change: 4
Schools and universities "earn" extra income by attracting more students and/or providing new services.

	Catalysts:
46%	changed provincial government priorities and programs
19%	direct involvement of employers and businesses
12%	significant society disruption, eg., environmental, economic, political, or natural disaster
12%	community partnerships bringing new / more resources

Change: 5
Much administrative work is done by non-educators.

	Catalysts:
38%	changed provincial government priorities and programs
23%	pressure from teachers and administrators
19%	direct involvement of employers and businesses

Change: 6
Direct skills instruction dominates as an means of teaching.

	Catalysts:
28%	direct involvement of employers and businesses
24%	organized / increased pressure from students and parents
20%	other / none of the above

Change: 7
Instruction is a balance between direct instruction and approaches to active learning, eg. group work and simulation.

	Catalysts:
44%	pressure from teachers and administrators
24%	organized / increased pressure from students and parents
12%	other / none of the above

Change: 8
Global studies, international education and environmental education have been incorporated into the curriculum.

Catalysts:

40%	changed provincial government priorities and programs
16%	significant society disruption, eg., environmental, economic, political, or natural disaster
12%	direct involvement of employers and businesses

Change: 9
Math and science offerings have been strengthened.

Catalysts:

36%	changed provincial government priorities and programs
32%	direct involvement of employers and businesses
12%	federal government intervention and national planning

Change: 10
Increased emphasis is placed on the need to remain current in one's field, and to develop new and different skills.

Catalysts:

32%	changed provincial government priorities and programs
28%	pressure from teachers and administrators
16%	direct involvement of employers and businesses

These are the ten changes forecast to occur before the year 2000 with the top three potential catalysts necessary to bring about each change.

After the year 2000

The following are changes that the respondents forecast would be implemented after the year 2000, with the top three catalysts for change for each in terms of percentage of responses.

Change: 11

A lifelong learning culture has been adopted and systematized, i.e., self-directed education has become lifelong and life-empowering, concerned with personal growth, community participation, leisure, and creativity.

Catalysts:

33%	community partnerships bringing new / more resources
19%	changed provincial government priorities and programs
15%	significant society disruption, eg., environmental, economic, political, or natural disaster
15%	federal government intervention and national planning

Change: 12

Excellence, effectiveness and efficiency have been defined for all levels of the system, and accountability focuses on results rather than on compliance with rules and regulations.

Catalysts:

27%	federal government intervention and national planning
23%	direct involvement of employers and businesses
19%	changed provincial government priorities and programs

Change: 13

An industry of knowledge creation and marketing has developed in the post-secondary education sector which contributes substantially to Canada's economic success.

Catalysts:

42%	direct involvement of employers and businesses
19%	significant society disruption, eg., environmental, economic, political, or natural disaster
19%	changed provincial government priorities and programs

Change: 14

Increased status and rewards have been allotted to the teaching profession.

Catalysts:

50%	pressure from teachers and administrators
15%	other / none of the above
12%	changed provincial government priorities and programs

Change: 15

All Canadians have access to quality basic education programs in their home communities.

Catalysts:

38% changed provincial government priorities and programs
15% federal government intervention and national planning
12% organized / increased pressure from students and parents
12% other / none of the above

Change: 16

Disparities in financial resources between jurisdictions and provinces have been resolved through an equalization system.

Catalysts:

58% federal government intervention and national planning
23% changed provincial government priorities and programs
8% significant society disruption, eg., environmental, economic, political, or natural disaster
8% other / none of the above

Change: 17

Secondary schools and universities specialize in programs, eg. science and technology, arts, international baccalaureate, modern languages, international business .

Catalysts:

35% changed provincial government priorities and programs
15% direct involvement of employers and businesses
15% other / none of the above

Change: 18

Schools and post-secondary institutions act as a broker for support services in the community, coordinating not duplicating services to meet the needs of students and seeking to prevent problems rather than trying to remediate them.

Catalysts:

35% changed provincial government priorities and programs
35% community partnerships bringing new / more resources
12% other / none of the above

Change: 19

Uniform-sized, sterile classrooms have been replaced by facilities which enable large and small group instruction as well as independent study.

	Catalysts:
35%	pressure from teachers and administrators
27%	changed provincial government priorities and programs
15%	organized / increased pressure from students and parents

Change: 20

All educational institutions support and demonstrate educational entrepreneurialism, eg. innovative and responsive programs such as "women in science awareness program".

	Catalysts:
31%	changed provincial government priorities and programs
15%	organized / increased pressure from students and parents
15%	direct involvement of employers and businesses
15%	other / none of the above

Change: 21

A team approach to work has lessened stress on teachers.

	Catalysts:
81%	pressure from teachers and administrators
8%	community partnerships bringing new / more resources

Change: 22

Schools are open year-round, with 3 or 4 ongoing semesters, and the academic day, year, facilities and schedule are all flexible.

	Catalysts:
58%	changed provincial government priorities and programs
8%	organized / increased pressure from students and parents
8%	significant society disruption, eg., environmental, economic, political, or natural disaster
8%	federal government intervention and national planning
8%	pressure from teachers and administrators

Change: 23

Evaluation of each student incorporates portfolio assessment of his/her work and student assessment includes results beyond those which can be measured with paper and pen.

	Catalysts:
27%	changed provincial government priorities and programs
19%	pressure from teachers and administrators
19%	other / none of the above

Change: 24

Theoretical and abstract knowledge is heavily complemented by experiment and experience, both in and out of the classroom, and experiential learning outside the formal education system is valued and validated.

	Catalysts:
25%	changed provincial government priorities and programs
25%	pressure from teachers and administrators
20%	organized / increased pressure from students and parents
20%	community partnerships bringing new / more resources
20%	other / none of the above

Change: 25

Students develop an understanding of the nature of humanity itself: our nervous system; our physiology; our evolutionary, as well as our recorded history; our relationships with the environment; our society; our moral judgements; our possibilities.

	Catalysts:
28%	other / none of the above
24%	changed provincial government priorities and programs
16%	pressure from teachers and administrators

Change: 26

Students, through the formal education system, become adept at functioning fully in society, acquiring practical work, life and citizenship skills.

	Catalysts:
28%	changed provincial government priorities and programs
16%	organized / increased pressure from students and parents
12%	direct involvement of employers and businesses
12%	community partnerships bringing new / more resources
12%	pressure from teachers and administrators
12%	other / none of the above

Change: 27
Employers find that graduates have acquired employability skills: academic skills, personal management skills, creativity and initiative, analytical and problem solving abilities, adaptability, communication and interpersonal skills, and teamwork skills.

Catalysts:

48% direct involvement of employers and businesses
20% changed provincial government priorities and programs

Change: 28
Significant changes in teacher preparation have resulted in teachers with advanced knowledge about learning and effective teaching.

Catalysts:

36% changed provincial government priorities and programs
24% organized / increased pressure from students and parents
24% pressure from teachers and administrators

These are the changes forecast not to happen until after the year 2000.

Around the year 2000

The following are changes that the respondents forecast, in approximately equal numbers, would be implemented before the year 2000 and after the year 2000. Therefore, these changes are forecast to occur somewhere around the year 2000, with the top three catalysts for change for each in terms of percentage of responses.

Change: 29

Education has been redefined as more than an academic endeavor that takes place in schools, and extensive coordination exists between the variety of teaching/learning agencies in society.

	Catalysts:
25%	changed provincial government priorities and programs
22%	significant society disruption, eg., environmental, economic, political, or natural disaster
19%	community partnerships bringing new / more resources

Change: 30

Education has become consumer-driven, with consumers demanding more relevance and accountability, and producers offering greater choice and higher productivity.

	Catalysts:
52%	organized / increased pressure from students and parents
19%	direct involvement of employers and businesses
15%	changed provincial government priorities and programs

Change: 31

National educational goals, objectives and standards have been established.

	Catalysts:
73%	federal government intervention and national planning
15%	changed provincial government priorities and programs
8%	significant society disruption, eg., environmental, economic, political, or natural disaster

Change: 32

The growing number of poor children at risk of educational problems has required extensive development of early intervention programs to identify and support these children.

	Catalysts:
31%	changed provincial government priorities and programs
23%	significant society disruption, eg., environmental, economic, political, or natural disaster
12%	federal government intervention and national planning
12%	pressure from teachers and administrators

Change: 33

More direct support is available to single mothers to upgrade basic skills, and to unemployed and underemployed individuals to enter the education system.

Catalysts:

42%	changed provincial government priorities and programs
23%	community partnerships bringing new / more resources
12%	federal government intervention and national planning

Change: 34

Through learning contracts, opportunities are made possible for extended work / study in the community, and all students have access to co-operative education programs.

Catalysts:

35%	direct involvement of employers and businesses
23%	community partnerships bringing new / more resources
12%	changed provincial government priorities and programs
12%	pressure from teachers and administrators
12%	other / none of the above

Change: 35

Students and/or their guardians have access to a great deal of information about educational options, eg. program success rates, learning approaches, unique features.

Catalysts:

73%	organized / increased pressure from students and parents
8%	pressure from teachers and administrators
8%	other / none of the above

Change: 36

All levels of the education system are actively involved in environmental preservation.

Catalysts:

58%	significant society disruption, eg., environmental, economic, political, or natural disaster
15%	other / none of the above
12%	organized / increased pressure from students and parents

Change: 37

There is more and different vocational training, with improved access to vocational and technical education and increased marketing to enhance its value.

	Catalysts:
50%	direct involvement of employers and businesses
23%	changed provincial government priorities and programs
8%	organized / increased pressure from students and parents
8%	community partnerships bringing new / more resources

Change: 38

Secondary students are treated like adult students rather than elementary students in terms of responsibility and choices.

	Catalysts:
58%	organized / increased pressure from students and parents
15%	other / none of the above
8%	direct involvement of employers and businesses
8%	pressure from teachers and administrators

Change: 39

The evaluation system has changed from a focus on what learners can't do to what they can do, i.e., from a deficit model to an achievement/mastery model.

	Catalysts:
35%	pressure from teachers and administrators
19%	changed provincial government priorities and programs
19%	other / none of the above

Change: 40

The knowledge and skills to be acquired for all levels of education and training have been defined in a competency-based manner.

	Catalysts:
19%	direct involvement of employers and businesses
19%	changed provincial government priorities and programs
15%	organized / increased pressure from students and parents
15%	pressure from teachers and administrators
12%	federal government intervention and national planning
12%	other / none of the above

Change: 41

Instruction is learner-centered and teacher-managed rather than teacher-centered.

	Catalysts:
36%	pressure from teachers and administrators
24%	organized / increased pressure from students and parents
24%	other / none of the above

Change: 42

The rigid structure and prescribed curriculum has been replaced with a relatively flexible structure, for example, non-traditional courses blend such traditional courses as math and science, or English and history.

	Catalysts:
32%	pressure from teachers and administrators
28%	organized / increased pressure from students and parents
16%	changed provincial government priorities and programs
16%	other / none of the above

Change: 43

Students acquire the elementary skills that make them effective as members of an organization: the ability to present ideas orally and in writing; the ability to work with people; the ability to shape and direct one's own work, contribution and career.

	Catalysts:
40%	direct involvement of employers and businesses
20%	changed provincial government priorities and programs
12%	organized / increased pressure from students and parents

Change: 44

All students exhibit a high degree of basic literacy and numeracy, i.e., reading, writing, communication skills, computation skills and logic.

	Catalysts:
32%	changed provincial government priorities and programs
16%	organized / increased pressure from students and parents
12%	direct involvement of employers and businesses
12%	community partnerships bringing new / more resources
12%	federal government intervention and national planning
12%	pressure from teachers and administrators

Change: 45

Students acquire the attitude that change is unavoidable and therefore that anticipation, planning and choice are important.

Catalysts:

24%	changed provincial government priorities and programs
20%	significant society disruption, eg., environmental, economic, political, or natural disaster
16%	direct involvement of employers and businesses
16%	pressure from teachers and administrators

Change: 46

New critical skills that emerge are integrated into the curriculum of the pre-employment institutions.

Catalysts:

76%	direct involvement of employers and businesses
12%	changed provincial government priorities and programs

Change: 47

Extensive career guidance programs, for parents and students, are geared to future employment needs and opportunities.

Catalysts:

36%	direct involvement of employers and businesses
28%	organized / increased pressure from students and parents
16%	changed provincial government priorities and programs

Change: 48

In their preparation, teachers have experienced more practical work earlier, and have been evaluated at an early stage for attitude and suitability.

Catalysts:

40%	changed provincial government priorities and programs
24%	pressure from teachers and administrators
20%	organized / increased pressure from students and parents

These are changes forecast to happen relatively soon, but there is uncertainty as to whether the period of occurrence is before or after the year 2000.

After the year 2000 or not at all

The following are changes that the respondents forecast, in approximately equal numbers, would be implemented after the year 2000 or not at all. Therefore, these changes are forecast to occur in the very distant future if at all, with the top three catalysts for change for each in terms of percentage of responses.

Change: 49

All Canadians are expected to continue formal and informal learning, eg. through a personalized skills development plan, and computer-managed record keeping tracks individual students of all ages as they move around provinces and across Canada.

Catalysts:

46%	federal government intervention and national planning
19%	significant society disruption, eg., environmental, economic, political, or natural disaster
19%	other / none of the above

Change: 50

Increasing numbers of students of all ages experience stress from societal problems and the education system deals holistically with each individual, participating in a network of programs and services to ensure that learning is maximized.

Catalysts:

31%	community partnerships bringing new / more resources
23%	other / none of the above
19%	significant society disruption, eg., environmental, economic, political, or natural disaster

Change: 51

Institutions never close, eg. shifts of regular students are followed by shifts of workers retraining, then a nightshift of users of the expensive computer and communications systems.

Catalysts:

31%	other / none of the above
27%	changed provincial government priorities and programs
23%	community partnerships bringing new / more resources

It is safe to assume that, with these three possible changes, the necessary catalyst will have to have a high probability.

Indeterminate occurrence

The following are changes that the respondents forecast, in approximately equal numbers, would be implemented before the year 2000, after the year 2000, or not at all. Therefore, these changes are forecast to occur maybe soon, maybe later, or maybe never, with the top three catalysts for change, should it occur, for each in terms of percentage of responses.

Change: 52

Social equity is promoted by addressing the needs of special groups, and the critical role of the public school as an equalizer in Canadian society has been retained.

Catalysts:

27%	other / none of the above
19%	organized / increased pressure from students and parents
15%	significant society disruption, eg., environmental, economic, political, or natural disaster
15%	federal government intervention and national planning

Change: 53

The education system is integrally linked with the media as a learning resource.

Catalysts:

35%	other / none of the above
19%	direct involvement of employers and businesses
15%	community partnerships bringing new / more resources

Appendix 7.11

ROUND 5.2 DATA ANALYSIS

(Improbable Changes with
Primary Obstacles)

Improbable Changes and Obstacles

Improbable change: 1

The critical relationship between quality of education and quality of life is evident by the priority status of education in terms of resource allocation and political attention.

Primary obstacle (percent of responses):

economic	28	social	4	technical	0
political	48	other	4	no obstacle	16

Improbable change: 2

The education system accepts responsibility for promoting positive proactive change rather than maintenance of the status quo.

Primary obstacle (percent of responses):

economic	0	social	24	technical	4
political	36	other	12	no obstacle	24

Improbable change: 3

The education system is guided by a national vision of a better future for all Canadians.

Primary obstacle (percent of responses):

economic	4	social	8	technical	8
political	64	other	4	no obstacle	12

Improbable change: 4

At the national level the issues of education, training and retraining are dealt with in an interdepartmental fashion with a coordinating council.

Primary obstacle (percent of responses):

economic	8	social	4	technical	16
political	60	other	4	no obstacle	8

Improbable change: 5

A federal/national department of training and education has been established to set standards in education, to define educational goals and to promote innovation.

Primary obstacle (percent of responses):

economic	0	social	8	technical	4
political	68	other	0	no obstacle	20

Improbable change: 6

Schools have become completely deregulated, allowing for extensive specialization, variety, and competition.

Primary obstacle (percent of responses):

economic	4	social	60	technical	16
political	16	other	4	no obstacle	0

Improbable change: 7

A voucher system, which gives the allocation of school finance to customers, allows parents and adult students to choose between competing educational options.

Primary obstacle (percent of responses):

economic	16	social	44	technical	24
political	16	other	0	no obstacle	0

Improbable change: 8

Schools are run on a contract or voucher basis, by many different organizations: teachers, colleges, community organizations.

Primary obstacle (percent of responses):

economic	4	social	20	technical	24
political	36	other	8	no obstacle	8

Improbable change: 9

The government measures and publicizes many different kinds of results, eg. test scores, student satisfaction surveys, dropout rates, that the consumer uses to make choices in schools.

Primary obstacle (percent of responses):

economic	8	social	28	technical	12
political	20	other	0	no obstacle	32

Improbable change: 10

Objective evaluations in each subject area are set against provincial, national and international standards and all students are assessed in a national testing system.

Primary obstacle (percent of responses):

economic	20	social	0	technical	16
political	36	other	8	no obstacle	20

Improbable change: 11

Students have become consumers, examining the opportunities and making informed choices.

Primary obstacle (percent of responses):

economic	4	social	20	technical	20
political	8	other	20	no obstacle	28

Improbable change: 12

All potential students undergo extensive screening processes, including assessment of ability, learning style, and prior learning, to ensure that they enter programs best suited for them.

Primary obstacle (percent of responses):

economic	16	social	28	technical	28
political	4	other	0	no obstacle	24

Improbable change: 13

The system provides flexibility and integration of age groupings so that individuals are not automatically limited to certain subject matter by age.

Primary obstacle (percent of responses):

economic	8	social	32	technical	28
political	8	other	0	no obstacle	24

Improbable change: 14

The system of gradeless education, or program continuity, encourages students to work at their own level of ability instead of meeting specific academic standards.

Primary obstacle (percent of responses):

economic	0	social	32	technical	20
political	12	other	4	no obstacle	24

Improbable change: 15

Time is irrelevant as all programs are completely modularized so that students can complete them at their own pace and because programs are open-entry/open-exit for all.

Primary obstacle (percent of responses):

economic	24	social	24	technical	32
political	0	other	8	no obstacle	12

Improbable change: 16

Students no longer focus on content, i.e., acquiring a body of "right" information, but on learning how to learn, how to ask questions, pay attention to the right things, be open to and evaluate new concepts, have access to information.

Primary obstacle (percent of responses):

economic	0	social	8	technical	24
political	0	other	28	no obstacle	40

Improbable change: 17

The curriculum is evaluated regularly for relevance to international society.

Primary obstacle (percent of responses):

economic	28	social	4	technical	24
political	16	other	8	no obstacle	20

Improbable change: 18

There is an increased emphasis on the arts.

Primary obstacle (percent of responses):

economic	44	social	4	technical	0
political	12	other	16	no obstacle	24

Improbable change: 19

All Canadian children have access to bilingual education.

Primary obstacle (percent of responses):

economic	36	social	8	technical	4
political	28	other	8	no obstacle	16

Improbable change: 20

Every school and every student has access to the use of audiovisual technology, CD-ROMs, remote data bases, and computers.

Primary obstacle (percent of responses):

economic	80	social	0	technical	0
political	0	other	0	no obstacle	20

Improbable change: 21

Most instruction and learning is individualized through microtechnology.

Primary obstacle (percent of responses):

economic	52	social	8	technical	12
political	12	other	8	no obstacle	8

Improbable change: 22

Students are encouraged to assess their own performance, largely through technological means.

Primary obstacle (percent of responses):

economic	16	social	12	technical	24
political	12	other	20	no obstacle	16

Improbable change: 23

Student progress at all levels is reported, not in percentages or letter grades, but in the competencies mastered and the level of mastery reached.

Primary obstacle (percent of responses):

economic	0	social	8	technical	40
political	8	other	8	no obstacle	36

Improbable change: 24

Student achievement is not compared with others but is based on individual progress and individual potential.

Primary obstacle (percent of responses):

economic	4	social	8	technical	12
political	16	other	12	no obstacle	48

Improbable change: 25

Teachers have acquired advanced technological skills during teacher training and have opportunities to maintain enhanced skills.

Primary obstacle (percent of responses):

economic	32	social	0	technical	12
political	4	other	0	no obstacle	52

Improbable change: 26

More seniors, with early retirements, longer lifespans and unused talents, are involved as teachers and volunteers.

Primary obstacle (percent of responses):

economic	0	social	4	technical	4
political	36	other	12	no obstacle	44

Improbable change: 27

There are fewer professional teachers and more paraprofessionals in the schools, with teachers viewed as learning managers.

Primary obstacle (percent of responses):

economic	4	social	8	technical	4
political	64	other	8	no obstacle	12

Improbable change: 28

The personnel system provides rewards for success with students and real consequences for failure, and the results of student assessment are used to evaluate the effectiveness of teachers.

Primary obstacle (percent of responses):

economic	0	social	28	technical	0
political	48	other	4	no obstacle	20

Improbable change: 29

The external community takes responsibility for everything except the intellectual development role of the school and post-secondary institution.

Primary obstacle (percent of responses):

economic	16	social	20	technical	8
political	36	other	12	no obstacle	8

Improbable change: 30

Existing community facilities are used as part of the school, eg. libraries, recreation facilities, science laboratories, computer facilities.

Primary obstacle (percent of responses):

economic	4	social	12	technical	16
political	16	other	0	no obstacle	52

Improbable change: 31

Communities develop plans and solve problems in conjuntion with the education system with its capacity to conduct research and provide human resources, professional and student.

Primary obstacle (percent of responses):

economic	4	social	4	technical	12
political	32	other	12	no obstacle	36

Improbable change: 32

Administration encourages community input, even community control of some aspects.

Primary obstacle (percent of responses):

economic	0	social	16	technical	0
political	44	other	0	no obstacle	40

Improbable change: 33

Administration is restructured to incorporate the distinction between educational leaders and school managers.

Primary obstacle (percent of responses):

economic	4	social	12	technical	4
political	40	other	12	no obstacle	28

Improbable change: 34

Administration includes monitoring a proper system for assessing innovations under controlled conditions by independent evaluators.

Primary obstacle (percent of responses):

economic	20	social	8	technical	16
political	24	other	4	no obstacle	28

Improbable change: 35

The cost of administration has been significantly reduced through considerable reduction in the size of the administrative structures.

Primary obstacle (percent of responses):

economic	0	social	12	technical	0
political	52	other	8	no obstacle	28

Improbable change: 36

There is provincial coordination rather than local control of postsecondary educational institutions.

Primary obstacle (percent of responses):

economic	0	social	8	technical	0
political	44	other	16	no obstacle	32

Improbable change: 37

There is site-based management for all institutions.

Primary obstacle (percent of responses):

economic	12	social	4	technical	0
political	36	other	20	no obstacle	28

Improbable change: 38

Catering to all ages, physical structures have changed to accommodate students of mixed ages.

Primary obstacle (percent of responses):

economic	48	social	20	technical	12
political	8	other	0	no obstacle	12

Improbable change: 39

Daycare (children and elders) is available in all adult education institutions.

Primary obstacle (percent of responses):

economic	84	social	0	technical	0
political	0	other	0	no obstacle	16

Improbable change: 40

Corporations reach deeper into the educational system to influence the quality of its supply of workers.

Primary obstacle (percent of responses):

economic	8	social	20	technical	4
political	44	other	12	no obstacle	12